

REVIEW of EDUCATIONAL RESEARCH

4782116

VOLUME VIII

APRIL 1938

NUMBER 2

FINANCE AND BUSINESS ADMINISTRATION

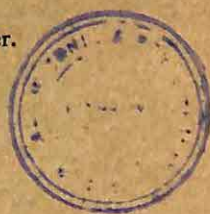
Reviews the literature from December 1934 to December 1937

Literature of earlier periods was reviewed in

Vol. V, No. 2, April 1935

Vol. II, No. 2, April 1932

For issues treating related subjects see inside back cover.



AMERICAN EDUCATIONAL RESEARCH ASSOCIATION
A Department of the
NATIONAL EDUCATION ASSOCIATION
1201 SIXTEENTH STREET NORTHWEST
WASHINGTON, D. C.



AMERICAN EDUCATIONAL RESEARCH ASSOCIATION

THIS ASSOCIATION is composed of persons engaged in technical research in education, including directors of research in school systems, instructors in educational institutions, and research workers connected with private educational agencies. The Association became a department of the National Education Association in July 1930.

Officers of the Association for 1938-39

President

W. A. BROWNELL
Duke University

Vice-President

BESS GOODYKOONTZ
United States Office of Education

Secretary-Treasurer

WILLIAM G. CARR
Research Division
National Education Association

Executive Committee

The president, vice-president, and secretary, *ex officio*, the chairman of the editorial board, and the following past president:

D. H. SUTTON

Ohio State Department of Education

EDITORIAL BOARD, 1938-39

DOUGLAS E. SCATES, *Chairman*, Cincinnati Public Schools

HAROLD H. BIXLER, Atlanta Public Schools

FRANK N. FREEMAN, University of Chicago

The President and Secretary, *ex officio*

Active Membership—Persons desiring membership may obtain an application form from the Secretary-Treasurer. Upon approval of the application by the Executive Committee the person applying will be invited to become a member of the Association. The Association has defined the qualifications for membership as follows:

Membership in the Association is restricted to persons of good ability and sound training who are working in the field of educational research, and who can present satisfactory evidence in the form of published or unpublished studies which show ability to arrange, to organize, and to conduct research investigations and experiments. In addition, evidence of an abiding interest in the field of educational research is essential.

Membership in the National Education Association is a prerequisite to active membership in the American Educational Research Association.

Active members of the Association pay dues of \$5.00 per year. Of this amount \$4.00 is for subscription to *The Review*. The *REVIEW* is published in February, April, June, October, and December.

Entered as second-class matter April 10, 1931, at the post office at Washington, D. C., under the Act of August 24, 1912.

American Educational Research Association
13. 8. 70
9176

REVIEW OF EDUCATIONAL RESEARCH

*Official Publication of the American Educational Research Association,
a department of the National Education Association.*

The contents of the REVIEW are listed in the EDUCATION INDEX.

Volume VIII

April 1938

Number 2

FINANCE AND BUSINESS ADMINISTRATION

Reviews the literature from December 1934 to December 1937

Prepared by the Committee:

Alfred D. Simpson, *Chairman*; John Guy Fowlkes, Charles H. Gilmore, J. Harold Goldthorpe, Paul R. Mort, and W. W. Theisen,

with the assistance of:

Harold Brandenhoff, Francis G. Cornell, and Rueben P. Heuer.

TABLE OF CONTENTS

Chapter	Page
Introduction	105
I. The Support of Education—Major Problems	107
PAUL R. MORT and FRANCIS G. CORNELL, <i>Teachers College, Columbia University, New York, New York.</i>	
II. Financial Planning	120
W. W. THEISEN, <i>Milwaukee Public Schools, Milwaukee, Wisconsin.</i>	
III. The Financial Implications of School Organization	126
J. HAROLD GOLDTHORPE, <i>University of Rochester, Rochester, New York.</i>	
IV. Budgetary Procedure	133
W. W. THEISEN, <i>Milwaukee Public Schools, Milwaukee, Wisconsin,</i> with the assistance of RUEBEN P. HEUER.	
V. Accounting: Financial and Property	142
CHARLES H. GILMORE, <i>State Department of Education, Nashville, Tennessee.</i>	
VI. Educational Costs and Their Analysis	148
CHARLES H. GILMORE, <i>State Department of Education, Nashville, Tennessee.</i>	

Chapter	Page
VII. Financial Reporting	154
W. W. THEISEN, <i>Milwaukee Public Schools, Milwaukee, Wisconsin.</i>	
VIII. Salary Scheduling	163
J. HAROLD GOLDTHORPE, <i>University of Rochester, Rochester, New York.</i>	
IX. Insurance, Purchasing, and Stores Management	167
JOHN GUY FOWLKES, <i>University of Wisconsin, Madison, Wisconsin.</i>	
X. The Support of Education: Federal, State, and Local Funding	171
JOHN GUY FOWLKES, <i>University of Wisconsin, Madison, Wisconsin,</i> and W. W. THEISEN, <i>Milwaukee Public Schools, Milwaukee, Wisconsin,</i> with the assistance of HAROLD BRANDENHOFF and RUEBEN P. HEUER.	
XI. Summary and Forecast	187
ALFRED D. SIMPSON, <i>State Education Department, Albany, New York.</i>	
Bibliography	190
Index	209

Copyright, 1938

By National Education Association of the United States
Washington, D. C.

All Rights Reserved

of state reimbursements to local units for taxes not left to local jurisdiction. For example, an intangible tax in Indiana has been distributed in part on the basis of assessed valuation for school purposes. An appropriation in Maryland has been distributed on a population basis to reduce county tax levies. Minnesota has reimbursed local units for loss of tax collections on railroad property by distributing funds for schools on a valuation basis. New Mexico prorated an emergency school fund on the basis of shortages of school budgets over a twenty-mill constitutional tax limit and distributed part of the proceeds of a motor vehicle tax to counties for schools on the basis of car registrations. A large part of a census grant in South Dakota has applied directly to the reduction of amounts levied on property by the local districts.

Taxation and Debt

Efforts to provide federal legislation for the support of schools are and probably will continue to be in competition with activities of the federal government engaged upon since the depression on a deficit financing basis. A Twentieth Century Fund report (105) concluded that (a) resources of the country are undoubtedly great enough to support present debts; (b) the large increase or present size of our public debt need not be regarded as cause for apprehension; but (c) continuance of deficit financing, although necessary in the depths of depression, would be both dangerous and unnecessary if carried into recovery; (d) government budgets must be balanced by paying off debts contracted during the depression with surpluses available during prosperity; and (e) an inflationary boom which may be the culmination of the recent recovery is becoming widely recognized.

The increase of indebtedness for all units of government was rapid prior to the depression (73, 74). Municipal and school authorities by that time were faced with shrinkage of revenues and heavy debt load which in many cases forced reduction of current expense budgets. The practice of governments incurring excessive debt during periods of prosperity and paying them off in times of depression is unreasonable on any grounds. Many jurisdictions have been burning their financial candles at both ends by constantly spending more money and increasing public debt on the one hand and generously bestowing exemptions to the taxpayer on the other. The seriousness of the local debt problem, as far as school support is concerned, is apparent when one realizes that from 70 to 90 percent of local debt is supported out of taxes on property. State and federal debts rest on a broader tax base.

The most significant contribution during the period was the study of municipal bonds by Hillhouse (34). Little had been known prior to 1930 about defaults in bond payments. According to Hillhouse, there was much overemphasis on the seriousness of debt difficulties from 1930 to 1936; debt troubles are common to county, city, school, and every other type of district; and default has hit all types of bonds. It is significant that municipal debt has continued to grow throughout the depression. Some of the

INTRODUCTION

THIS NUMBER of the *Review of Educational Research* represents the third cycle of treatment of finance and business administration. I have served upon all three of the committees dealing with this subject and regard this as my last time.

Administrators, or persons dealing with administrative functions, are likely to be placed upon this reviewing committee. I am always conscious myself of a sort of forced failure to do so thorough a job as I should like. For this lack of refinement I am prone to blame those continuous jobs that come down so uncompromisingly upon the heads of persons concerned with administrative functions.

The material of a research nature reviewed herein covers in general the period from December 1934 to December 1937. This number differs extensively from the previous cycle number in the organization of chapters. In the present number we have also urged ourselves, whenever we could remember the stimulant, to jump across into the general field of public administration and public finance in order that we might review studies there that have an increasing applicability to education.

I wish to express my great appreciation to the members of the committee for their contributions, rendered so often at sacrifice; and to Dr. Cornell and Dr. Schmidt for significant assistance in the preparation of reviews and in organizing the number.

ALFRED D. SIMPSON, *Chairman,*
Committee on Finance and
Business Administration.

CHAPTER I

The Support of Education—Major Problems¹

PAUL R. MORT AND FRANCIS G. CORNELL

ANY CONSIDERATION OF THE PROBLEM of taxation for school support during the period covered by this review must give recognition to the trends and tendencies which have been emerging. Literature of the past three years carries us back into periods covered by former cycles of the *Review of Educational Research*, where issues then prevailing take on, in retrospect, an entirely different significance. For this reason the present review will not be strictly limited to the years 1935 to 1937.

It is widely recognized that since the advent of the depression—a period covering some eight years—the problems of school finance and public finance have become more pressing and more complex. A marked increase in the volume of literature attests a greater interest in these vital problems. For the most part, however, the numerous publications in this field cannot be classed under the category of research. Many treatises and reports have been produced for purposes of public relations; that is, they have been prepared so as to popularize theory and technics, or to apply them to new situations.

Education and Public Finance

The tremendous changes which the depression has evoked make it necessary for students of educational finance to see their problems as part of the broader area of public finance in general. An increase in the amount of literature in the broader field has been evidenced by the publication of revisions and new general treatises of vast scope. To the earlier American volumes of significance, especially to current problems of taxation, such as those by Lutz (51) and Jensen (42), have been added, since 1930, the volumes by Shultz (88), King (46), Buehler (12), and Lutz (52); and an entirely new work by Jensen (41). Some indication of the increase in attention given to the problem of taxation is suggested in the 1936 revision of *Public Finance* by Lutz (52), in which factual and statistical materials covering the whole field have been brought down to date. In this work, Part III on "Taxation" is expanded by approximately 100 pages. New chapters appear on "Tax Systems and Tax Administration" and "The Effects of Taxation."

While the sources noted above are restricted to American public finance, the student interested in problems from the international point of view will find a thorough treatment in the 1936 revision of *Science of Public Finance* by Shirras (87), a two-volume work of over 1,000 pages. Another

¹ Bibliography for this chapter begins on page 190.

important source for the internationally-minded, by Bastable (6), has not been revised since 1903.

Centrifugal and Centripetal Tendencies in Conflict

The central theme of the tax problem with reference to both education and other functions of government is today one of *central-local* relationships. In this country, with its many thousands of local units, our forty-eight states, and the federal government, the problem of providing adequate revenues from public taxation to satisfy budgetary needs of all individual units in the system as a whole stands as the focus of most of our recent research.

The fact that revenues have become more available to state and federal governments is well known. The movement in taxation has been in the direction of centralization. Since governmental services in general, and education in particular, have not followed this centralizing trend so rapidly, there has resulted an unbalance of revenues and budgetary needs in subordinate governmental units. This fact has been an important basis for recent analyses of the problem of federal aid to education, a summary of which has been prepared by the National Education Association (66). The possibility of federal grants effecting significant adjustments in the tax structure has been considered in the federal support study directed by Mort (63) and in studies of the Advisory Committee on Education (83).

Tax Revenues and Fiscal Adjustment

It is virtually impossible to consider the problem of taxation aside from a consideration of the nature of the administrative characteristics of all services to be supported, and hence, the funding of these services. The problem of central-local administrative relationship involves essentially the proper allocation of administrative responsibility to obtain the best operation of the service; the proper allocation of responsibility for obtaining the funds to support these services; and the proper coordination of administrative jurisdiction with financial support. Newcomer (77) and Heer (33) have written analyses of federal-state-local tax coordination which are far too important to school finance to be overlooked.

Legislative and administrative devices enabling subordinate governmental units to derive adequate revenues for services allocated to them, or central governmental agencies to make proper use of revenues in excess of their governmental cost needs, have been termed "fiscal adjustment." As far as the educational program is concerned, state aid is the remedy most commonly studied; it is also used for other services, such as highways and social welfare. The study by Hinckley (36) represents the first comprehensive analysis of state grants-in-aid in the United States. He related aid for highways, education, health, and welfare, to diverse problems of taxation, local government areas and organization, state supervision of local government, the allocation of functions, and the general reorganization of local government. The fact that the funding of education has

served as a channel for the distribution of the potential excess revenues of central governments, both state and federal, has received much attention of investigators in school finance in the past ten or fifteen years. It has been an important factor in selecting plans both for state and federal aid to education (63).

There are, however, other fiscal adjustment devices, notably, separation of sources of revenue, local sharing of centrally-collected taxes, and reallocation of services (104). Newcomer (76) recently reported methods of fiscal adjustment in England and Germany. A comparison was made of the development of central finance in Germany, which has pursued the policy of sharing fixed percents of centrally-administered taxes, with that of England, which has shared central funds by grants-in-aid according to various measures. Among others, Studenski (92, 93) has observed that the tendency for newer types of tax resources to be of a statewide or nationwide character is common to all industrial nations. As a matter of fact, the United States has made far less use of its national tax-raising resources than other countries.

Taxation and Local Control

As more and more taxes are levied by central governments, the problem immediately arises as to whether the central governments shall assume control over the services supported by these new revenues. This has been one of the most important problems growing out of our attempts in this country to adjust taxation to problems of educational support. It has not been viewed from any single point of view by authorities in the field of public finance or even among authorities in school finance. The practice of states as indicated by the administrative and legislative changes since 1930 does not reveal a constant policy one way or the other, although, in matters of control of local expenditure, innumerable laws have been passed during the present decade.

Those treating the problem from the angle of governmental finance are somewhat inclined to propose rigid central control over expenditures supported out of central funds. Hinckley's study (36) built the thesis that state aid as a means of equalizing burden and as a means of *raising standards of service* in certain functions of statewide concern should not become a prop for supporting weak and inefficient local governments. Carr (13), in studying state-local relationships in Oklahoma, proposed a single state department of local finance to replace numerous different agencies for the supervision of fiscal programs of local authorities. In his study of the state of Tennessee, Snively (91) championed state control over local finance.

Some students, however, have seen implications for state control over local authorities other than mere efficiency of local administration or limitation of spending. In surveying local government in Minnesota, Anderson (5) opposed measures which would reduce local expenditure by the elimination of local services. Davisson (23) indicated that constitutional and legislative control of local units directed toward property tax relief in

California had not actually attained that end. A Massachusetts study by Van de Woestyne (110) supported the conclusion that although some state control is essential, vigorous, intelligent, and unremitting activity on the part of local officials and taxpayers themselves is tremendously important.

A new and forceful argument for the fiscal independence of public education—local, state, and national—has been prepared by the Educational Policies Commission (72). Whether or not separatism of educational finance is to continue as a principle of governmental organization must be weighed along with other matters examined by students of local government in general.

Basic studies made in the field of federal aid to schools by Mort and others (63) have sought "federal support without control." This stand was taken by most groups advocating federal aid measures (66). The following citation from Lutz (52) would appear to be a sound approach to the federal problem:

Despite the lack of experimental data, it is possible that the country may be persuaded, or forced, to consider a reallocation of internal functional responsibilities. If so, it must be accomplished largely a priori. So far as a problem of such great difficulty can be solved in this way, the effort should be made to establish the new distribution of powers according to the probable relative administrative efficiency of each branch of government. This is the fundamental issue, which must not be obscured by any illusions carried over from the era of "easy money," or any preconceptions based on the collapse of state initiative under the impact of federal financial aid. The central question must be, What things can the federal government do, for the common good, better than the states can do them?

Studies outlined by Mort and Cornell (62) are being undertaken to interpret the issue of control in terms of long-term effects on educational programs.

Trends in Legislation and Yield

Trends noted in the previous cycle of the *Review of Educational Research* on taxation have continued. The depression has forced states to increase their share of supporting education and other services. The ten state taxes in 1937 ranking highest, for the country as a whole, in yield were, in order: gasoline, sales, income, motor vehicle, property, alcoholic beverages, inheritance, special taxes on insurance companies, special taxes on utilities, and license taxes (96, 104). New revenues have been increasingly of the non-property type.

Estimates by the Twentieth Century Fund (104) indicated that between 1933 and 1936 state-collected taxes were shared with local governments in increasing amounts. Taxes shared, in order of amounts for the states as a whole, were motor fuel, sales, motor vehicle, corporation, income, and liquor. State grants-in-aid have increased steadily, and by far the largest element of increase has been in education grants.

Summaries of tax systems are to be found in the volume by the Tax Research Foundation (100), the sixth revision of which, with supplements,

has been increased in scope. A seventh edition of this valuable source is due at the time of this writing. The yields of various taxes for 1937 by state and local governments have been compiled experimentally by the Tax Policy League (99). The most recent official report of state tax collections in the United States appeared in 1936 (109). The National Industrial Conference Board reports on *Cost of Government in the United States* (73, 74) gave useful estimates. Special features of the Board's most recent report (74) included developments in federal finances; comparisons of tax and debt burdens in this country and in England, France, and Germany; and tax burdens on various types of business enterprises in the United States.

With tax legislation changing so rapidly in the years since the depression, the need for current summaries has been great. In the general field, summaries of this nature have been prepared by Manning (54, 55, 56) and the Tax Policy League (98). New school finance laws were summarized by Chambers (14), Keesecker (43), and the National Education Association (68, 70, 71). An indispensable service has been rendered by the National Education Association in its undertaking of cumulative summaries of school finance systems (69). Taxation for public education in the courts has been annually reviewed by Yakel (114). Trends in taxation for schools have been indicated by Bolmeier (10), Keesecker (44), and the National Education Association (67).

Studies of Taxpaying Capacity

In its simplest terms the gross fiscal capacity of a governmental unit is represented by available revenues both from internal taxation and from other units, such as state or federal grants to local districts. Net capacity for the support of schools only may be obtained by charging against the tax and other revenue-raising capacities of the unit, debt charges, and the current costs of other governmental services. The net tax-raising capacity of units for the support of schools therefore involves three elements: (a) economic resources and tax ability, (b) costs of government other than education, and (c) debt service charges.

Measures of Taxpaying Ability

The study on federal aid directed by Mort (63) contained an estimate by Newcomer of potential yields of six taxes; an index of ten measures of wealth, income, and business activity, unweighted; and ability measures weighted by regression methods to approximate tax yields. The last was developed solely for use in possible federal aid legislation. Chism's study (15) presented an index of states based on potential yields of a model tax plan. Chism compared states with respect to relative ability per unit of educational need. Norton and Norton (78) summarized the above studies and presented indexes of the relative ability of states covering the years 1930 to 1934 based on the Newcomer index of ten measures of

wealth. A study by Ashby (65) used data by Chism to compare states on ability, effort, and adequacy in state support of schools. These researches have all been directed toward the problem of federal funding discussed in another chapter of this volume.

New sources bearing upon the taxpaying ability of state and federal governments have been prepared by Loeb (50), the National Industrial Conference Board (57, 58, 90), the Brookings Institution (64), and the United States government (107, 108). A study by Cornell (19) of counties in New York proposed indexes of local ability based upon economic statistics. His proposals were directed towards stabilizing state school equalization programs by use of an index of property taxpaying ability to be used in lieu of assessed valuations. This approach may be of value in the future where state supervision of property assessment cannot be obtained. The need for a plan such as this has recently been evidenced by the change in North Carolina, made partly in the belief that a small-fund equalization would not operate because of inaccuracies in the determination of local ability. Competitive under-assessment brought county after county under the equalization feature of the Colorado plan to the point where pro rata apportionment was necessary and the entire abandonment of supplementary grants allotted on a census basis (69). Similar difficulties in equalization have appeared in the state of West Virginia (69).

Tax Reduction and School Support

The most marked change in the distribution of taxation among governmental divisions has been in the tremendous increase of tax revenues provided by the federal government. This has been accompanied by an increase in costs to the federal government, mostly for other items than education. The pressure of increased governmental cost and reduced revenue for education have been noted by investigators showing the need for increase in support of schools (66, 67). The question of whether the economic effects of education are such as to justify a far greater share of our national income and the question of whether or not the wants and the political organization of American people should be revamped to permit additional expenditures involve considerations far beyond the scope of this review. Yet there can be no doubt that to a great extent education has suffered. Public education costs declined at a much greater rate than others. Since 1933, however, through state and local taxes, there has been a resumption of support for public education (66, 67).

Education has been placed at a disadvantage not only because a property tax reduction has put a strangle-hold on the basic sources of school revenue, but in many cases in the distribution of centrally-collected funds, adequate provision has not been made for a sound educational finance program. In some states funds are apportioned on a basis of no measure of educational need whatsoever, although they are commonly classified as school aid funds. Some of these funds are, in effect, centrally-collected, locally-shared funds, even though earmarked for schools, taking the form

circumstances, according to Hillhouse, which had combined to maintain the increase of municipal debt have been low interest rates, which have encouraged borrowing; the issuance of bonds for relief financing; the alternative to default of refunding as a further means of temporary tax reduction; the postponement of capital improvements during the depression; and the federal stimulation of municipal debt incurrence. Municipal defaults are most common in major depression years, although Hillhouse believes that adequate solutions are not to be found in emergency legislation. Remedial measures taken by states include increase in state aid, funding and refunding legislation, state receivership laws, and state administration. In some states defaulting and debt-ridden local units have been left to their own salvation. A new type of adjustment has been the federal Municipal Debt Adjustment Act, by which the federal government assisted in eliminating municipal defaults.

Hillhouse proposed more effective debt limits and the solution of the problem of overlapping territorial units. He recommended, outside of metropolitan areas, the extension of central supervision. By way of forecast, he anticipated that in the future there would be an expansion of municipal services; that the policy of refunding indebtedness over a long period of time to "level out" debt service load presages heavier debt burden; overlapping units, with bonding and borrowing authority, will continue to encourage further borrowing.

Keyworth (45) and Owen (80) have reviewed court cases on the indebtedness of school districts covering such matters as debt limitation, the validity of indebtedness, legal and equitable remedies against districts in cases of default, school districts as affected by bank failures, and legal procedural requirements.

The Property Tax

The weakness of the property tax as a revenue producer has continued to receive the attention of investigators. The limits of property taxation have probably been reached in this country. It has been observed that the rates of property taxation are already so high that, politically speaking, an important increase is hardly to be expected (104). The spread of tax-reducing measures in the states, as noted below, is good evidence that at least the political limits of this tax have been reached. Some states, such as California, Delaware, New York, Ohio, Oklahoma, and Vermont, have reduced the property tax load by levying no state tax on property (99, 109).

Jensen (40), in writing of the advantages and disadvantages of property taxation in the United States, gave the following reasons why this tax will continue: (a) Property in the mass indicates ability to pay taxes in spite of criticisms of it—that it is a bad measure of individual ability. (b) The property tax is the only tax capable of moderately successful local administration and it meets local fiscal needs better than any other

tax. (c) This form of tax conforms better to the fiscal requirements of local taxing units as they are set up, which is an important item. "One of the desirable characteristics of American local government is its local autonomy. . . . This American institution of local government ought not to be impaired without compelling reasons." Furthermore, Jensen warned us of misjudging the property tax during depression troubles. The blame for the reduction in property tax yield he would place elsewhere.

Property Tax Administration

The need for equitable assessment of property continues. The failure of prevailing practices has been summarized for the country as a whole by Silverherz (89) in a special report of the New York State Tax Commission. He summarized reforms proposed to remedy inequalities in assessment, including equalization and devices for forcing full value assessment, such as separation of sources, tax-rate limitation laws, and conditioning state aid upon full value assessments; and, upon the basis of the Wisconsin program, he advocated a plan of state supervision over local assessment.

From the legal point of view, property valuation is involved in cases of legal indemnity—cases of damages in torts, contract actions involving property, eminent domain, and fire insurance awards—as well as in matters of taxation. An extensive study of valuation of property based upon legal sources and involving decisions of the court regarding property appraisal has been made by Bonbright (11). In his study, eighty-nine varieties of value were identified, such as actual, assessed, book, real, rental, true, and cash.

In a study of public school tax management in Texas, Wilkins (113) weighed the advantages and disadvantages of having school taxes collected by the municipal tax department against those of having school taxes collected by a separate school tax department. His criteria were tax delinquency, adjustment of the tax income period, costs of administration, control over taxation, controlling and safeguarding tax money, and the financial support of schools. His recommendations were in favor of employing the municipal tax department rather than a special school tax department.

Reducing the Tax Base—Exemptions and Delinquency

By 1937 there were twelve states which had some type of homestead exemption, and enabling acts in Utah, Georgia, and North Carolina (61). Most states carrying this provision are in the South. The practice involves exemptions of small parcels of real estate used for residential purposes from the state tax. Only the state of Florida has exempted homesteads from most of the local taxes also. In some instances it has been promoted ostensibly for the purpose of encouraging homeownership. The trend toward homestead exemptions, along with similar efforts to reduce taxation on property, seems to be ill-advised (32). The practice has been questioned by reports of the Twentieth Century Fund (104, 106). Among the disadvantages

of exemptions of this nature are to be mentioned that taxes to replace them may weigh as heavily on small homeowners as did the property tax. Moreover, it does not accommodate personal differences since it discriminates against the tenant who might be in just as great need for relief from tax burden.

Among studies of the homestead exemption applying particularly to individual states are those made in Alabama (1), Oklahoma (79), and Michigan (49). The Michigan study was prepared by Leonard and Mohaupt for the Detroit Bureau of Governmental Research. Drawing on such factual matters as could be presented on the results of homestead exemption laws in the various states, the authors concluded that such laws are not based on sound social philosophy and that they are mere expedients which seek to give preferential treatment to one particular group at the expense of other groups.

Several studies on tax delinquency have appeared during the period (7, 9, 38, 106, 112) showing trends and the extent of delinquency in various localities. Tax legislation relating to tax delinquency was passed by a majority of the states in 1937 alone (56). Nineteen states made provisions for waiving or reducing delinquent tax payments. Eight states authorized installment payments of delinquent taxes. California has had a moratorium on tax sales. Other states encourage payment of delinquent taxes by deferring the time of payment, extending redemption rights, or postponing foreclosures.

Reducing the Levy—Tax Limitations

Students of governmental finance and educational finance who have given serious thought to the entire problem of fiscal economy have built up a very strong case against tax limitations. There is a great variation in the types of tax limitations placed on local governments (100). Some states have separate debt and current expense limits, others have over-all limits. So far as the borrowings of state governments or local districts are to be retired out of tax revenues in the future, the tax limit and the debt limit involve the same problem.

It has been rather convincingly demonstrated that tax limits have not limited property taxes; that they have not accomplished reform in state-local systems; that they have not produced economy in government; and that they have not contributed to the improvement of services. It is the view of some that certainly such measures will not contribute to adaptability in public education systems. The property tax limit has placed mechanical control upon governmental services; it involves an attack upon the problem which disregards more fundamental issues; and it has produced fiscal chaos.

The evidence for and against property tax limitation laws as viewed by authorities was summarized by Leet and Paige (47). Hillhouse and Welch (35) undertook an appraisal of these arguments.

Serious students of the problem would approach such relief as is needed on property by means of more thoroughgoing reform in state-local systems attacked from the other end (104). It would appear, above all, that nothing is to be gained in the reduction of local revenue-raising by eliminating or hamstringing local governmental services. This seems to be true regardless of whether the axe happens to fall upon education or some other governmental service.

Certainly we hope that in the future a look back at the recent period of rapid increase in property tax-reducing legislation will reveal that these measures were mere exigencies, brought on by the depression, of an unbalancing of our federal-state-local financial system. In many cases it is apparent that all considerations regarding the need for flexibility in local tax freedom have not been considered.

Non-Property Tax Revenue

The Sales Tax

With the exception of the gasoline tax, little of which supports education directly, the sales tax is the most productive non-property tax now used by states. The number of states using this tax increased rapidly during the depression (66). This tax and the liquor tax were the two which especially made possible the expansion of the tax revenue collections of state governments during the depression (104). It has been observed that states adopt it because it produces large amounts of revenue on short notice; it is fairly stable, being neither excessively sensitive or unsensitive to changes in business conditions; and it produces tax consciousness. From the standpoint of the tax system as a whole, however, it is recommended only in cases of extreme emergency (75). Too often it is used where more equitable alternative sources have not nearly been exhausted (75). It bears more heavily on the low income groups; that is to say, it is regressive. It has no overwhelming advantage in ease of administration and its burden is often borne by merchants who cannot shift it to the consumers. At the present time, for the country as a whole, states are relying more upon this source of revenue in terms of amount yielded than upon income taxes which some recommend to replace it (104).

Administrative problems of collecting the sales tax have been studied by Walker and Weitzell (111). Chism (16) studied the effects of the sales tax on the relative taxpaying ability of states as measured by the potential tax yields of various taxes. Nelson and others (75) prepared the best brief treatment of the sales tax yet written.

The Income Tax

There is a growing conviction among students of public finance and students of school finance that greater use should be made of the income tax, even though there has already been an increase in the number of income

tax laws in states and in the use of this tax by the federal government (63, 67, 92, 96). A study by Magill (53) traced the development of legislative and judicial ideas regarding different types of taxable income. He gave the reasonings by courts for determining what is and what is not taxable income. His study contained British and German decisions on the income tax question. It is less relevant to problems of school finance than the matter of tax legislation and administration. An interesting treatise by Tuller (103) revealed the nature of the argument of those opposing the taxation of incomes for the support of governmental services. This type of tax is held by Tuller to be a tax on property, hence unconstitutional, since the Fourteenth Amendment forbids the states to levy graduated taxes on property. The author is a resident of California, which recently adopted a graduated personal income tax. General sources relating to income tax legislation and income tax yields are listed in the bibliography to this chapter.

Other Taxes

No attempt has been made in this review to follow through research produced on each of the various types of taxes not specially concerned with school support. Nevertheless, a few studies should be mentioned. The chain store tax is of current importance in the development of our state tax systems. With reference to it there have been two summaries by the Tax Policy League (94) and the American Retail Federation (3). An important compendium on taxation of business is a collection of papers by the Tax Policy League (95). Treanor and Blakey (101) summarized the principal features of death tax laws in the forty-eight states, with a view to increasing the same in Minnesota. The most significant information on the gasoline tax in the United States is to be found in the reports by Crawford (20, 21).

School Support and Tax Reform

Studies in school finance during the past few years have been laid down upon rapidly broadening foundations. Inevitably as students of school finance attempted to see the total problem and the relation of local, state, and federal authorities to the most complete solution of supporting schools, they have entered the field of federal aid. In the taxation field there has likewise been concern over nationwide reform. A report of the Interstate Commerce Commission (39) condemned the chaotic individualism of American governments in their conflicting tax programs. This report treated various problems of fiscal adjustment, and proposed such remedies to conflicting taxation as (a) abandonment of gasoline taxation by the federal government, (b) relatively more reliance upon income taxation, and (c) federal and state cooperation on death taxes. Girard (30) studied the possibility of state uniformity in taxation. He concluded that, although complete uniformity in state tax policy is neither possible nor desirable, there is proper scope for extension of interstate planning and for uniform legis-

lation. A study by Powell (82) attacked certain aspects of federal-state relationships.

Studies by the Twentieth Century Fund (104, 106) examined the American tax problem as a whole, federal, state, and local, although in legal or actual fact there is no American system. The writers of these reports used the two primary objectives of adequacy in producing revenue, and social control. With emphasis on these two points there is considerable clarification in the understanding of the theoretical goodness of a tax system. Such matters as tax justice, adaptability, flexibility, and equity are all treated as secondary criteria contributing to the other two. If at least the first consideration, adequacy of revenue, were applied to reforming our state and national tax structures, benefits to education would obviously be advanced.

Immediately when the social control or taxation for social reconstruction point of view is taken, such as that held by Studenski and others (92, 93), one need go but a step further and he has ample support for the argument of better financing of education. In practice, however, it has long been recognized that any wholesale redirecting of income of American taxpayers into other channels is a complex process. Countries have not changed rapidly in their tax programs unless this has been preceded by radical changes in governmental organization (92). We will undoubtedly continue to forsake theoretical economic limits of taxation for political limits inherent in American democratic tradition. Much is yet to be known of fallacies and stereotypes in thinking along this problem. In spite of the fact that there has been groping in the dark, it would appear that states have been moving in the right direction.

Too little is known about elements in American culture and the legislative structure and administrative organization of our state educational systems to understand fully why wide gaps exist between practice and theory in school support (62). Educational statesmen of future periods of state reform in school taxation will undoubtedly need to be students of practical politics. Interesting new sources by Zeller (117), Graves (31), the Tax Policy League (97), and Almack (2) suggested what has recently appeared along this line.

The future place of the federal government in school finance is not to be predicted. New researches of the Advisory Committee on Education we hope will be helpful in directing federal participation into proper channels. Some of the practical problems of maintaining efficient educational programs (this term taken in its broadest sense) must receive the continued attention of educationists who are to face inevitable problems of financial readjustment in the future.

CHAPTER II

Financial Planning¹

W. W. THEISEN

Objectives and Needs

FINANCIAL PLANNING for public education embraces the fiscal phases of large-scale adaptations to social needs and conditions. It has for its primary objectives educational betterment, economy in expenditure, the assurance of adequate financial support under varying economic conditions, and the guaranteeing of a basic education to all children irrespective of the accident of their social inheritance, their place of residence, or the prosperity of the times (141). Fundamentally, it seeks to ascertain as accurately as possible the present and future educational needs of society, the consequent needs of the schools, and a plan for financing those needs as they occur. It includes not only long-time budget estimates, but also a study of the factors which affect revenues and costs.

Among the purposes of a long-term plan are: "(1) to link the annual budgets together into an integrated school program, (2) to prevent the initiation of school projects which would almost certainly have to be abandoned later because of inability of the district to finance them, and (3) to insure that each school year shall bear its own financial burdens as well as be free from the burdens rightfully chargeable to other years" (145).

Need for financial planning arises out of a variety of causes which have been pointed out, or are strongly implied, in the writings of students of educational finance. Among them are: (a) social changes affecting the need for education in a given community or section—including shifting of population from one section of the country to another, from farm to city and from city to suburb—and diminishing birth-rates; (b) changing demands for young workers in industry, resulting in a lengthening of the period of schooling, and the demand for the reeducation of adults; (c) wasteful administrative practices, including such matters as excessive costs, the operation of small and expensive school units, duplication of educational effort, losses suffered through improper safeguarding of funds, unnecessary interest payments; inefficiency in the planning and location of school buildings; (d) the need for stabilizing income and reducing the shock of depression years, unusual demands for funds when buildings are constructed or bond and interest payments must be met; (e) inequalities in educational need and opportunity, differences in effort and willingness to support schools, inequalities in educational burden and ability to support schools, inequalities in assessment and tax collection; (f) need for

¹ Bibliography for this chapter begins on page 194.

control over funds; and (g) dependence of school districts on outside bodies for sanctioning of school budget requests (see bibliography for references which apply). The problems which should be considered in financing a long-term program of education were treated by Van Kleeck (154).

Financial planning is not limited to any single aspect of the school program. Flocken (127) pointed out that long-term planning is involved in certain budget items such as those representing major changes in educational policy, possible future building repairs and new construction, debt amortization, and plans for employee retirement. Matters included in long-term budgets in Oklahoma were: "(1) the school's three-year program of studies; (2) the building program of the district for at least five years ahead and how it is to be financed; (3) the schedule of payments of insurance for at least three years ahead; (4) provisions for the replacement of school buses; (5) the schedule of projects for the redecoration and repair of school buildings, equipment, and apparatus; and (6) other similar items" (145).

As is to be expected, certain aspects of the complete program lend themselves more readily than others to precision in predicting needs. If, for example, the remaining half of a twenty-year serial bond is to be retired in the next ten years, and no new issues are contemplated, the amount which will be required for bond and interest payments in each of the next ten years can be accurately determined. So far as pupil population and building costs can be foretold with accuracy, capital outlay needs can also be determined with reasonable accuracy. Similarly, so far as trends in property values remain constant and current tax laws remain in effect, the amount of revenue which may be raised over a period of years can be determined with a fair degree of accuracy. As improvements in prediction technics are developed, accuracy in predicting tax yields may be expected to increase. Fixed policies of the local school district with reference to such matters as pupil-teacher ratios, salary schedules, retirement, types of education provided, per-pupil quotas for textbooks and supplies, equipment standards, and maintenance schedules, will also contribute toward the exactness with which the fiscal needs of the schools can be foretold. Noteworthy advances in recent years in the development of valid and reliable measures for determining such matters as the relative need, effort, and ability to support schools, as applied to different districts, areas, or states, have contributed greatly to the possibilities for improved financial planning.

Advantages and Limitations

Among the advantages claimed for long-term planning are: that it stimulates planning for social and economic security on a local, state, and national basis; that it tends to improve the financial position and practices of the district; that it makes for more effective educational results;

that it helps to estimate "terminal costs"; and that it tends toward security and stability of revenues and economy in expenditures (122, 123, 131, 133). Among the difficulties and limitations listed by De Young (122) were: inaccuracies resulting from such variables as population growth, fluctuations in business prosperity and in the ability of the forecaster; incompleteness of detailed basic data; short-term appointments; and rapid turnover among school executives and board members.

Limitations on financial planning under the federal government's effort to aid education through the Public Works Administration were pointed out by Falk (124). Among them he cited: (a) restrictions and regulations which prevent the application of the principles of financial planning; (b) lack of understanding as to what constitutes intelligent school plant planning; (c) curtailment of financial benefits by unreasonable restrictions and regulations and improper supervision; and (d) disregard for equalization of educational opportunity.

De Young (122), in a recheck of 317 schools out of a group of 816 which three years earlier had prepared a budget for a period longer than a year in advance, found that 15 percent prepared a long-term budget. He described the long-term budget plan developed by Studebaker at Des Moines whereby, for a period of the past ten years, efforts have been made to determine budget needs five years in advance of actual spending.

Local Planning

Among the problems of local planning is the consideration of the proper unit of school support and administration. For example, Overn (146) reported a study of education in Sargent County, North Dakota, which sought to determine inequalities in ability to support education, and to improve the schools without raising taxes. Recommendations called for: (a) uniting districts into a single unit for the county; (b) employing the wealth of the county to support the entire educational program; (c) using utility taxpaying power for the benefit of all districts; (d) reduction in number of schoolboard members to a minimum; and (e) dividing the county into districts to create schools of at least 500 pupils.

A significant number of studies of this kind have been made, dealing with reorganization of schools units and the effect on school income and expenditures. These studies are reviewed in another chapter in this issue. The relation of educational finance to municipal finance is another problem of local long-time planning. It is treated elsewhere in this issue.

The planning of capital outlay has been practiced more or less for some time, but new phases have developed since the onset of the depression. For example, as a means of meeting the problem of fluctuating incomes, Hamon (129) proposed that a pay-as-you-go policy in schoolhouse construction be employed in periods of rising prosperity, or on the up curve of the business cycle, and that 10-year bonds be issued during depression periods, or on the down curve of the business cycle. He urged that callable

provisions be inserted in bonds so that they may be retired or refinanced at lower rates of interest in prosperous times. Staley (151) reported the results of a 20-year building program at Hastings, Nebraska, set up in 1925. The plan thus far has resulted in plant enlargement and modernization which has in turn permitted the offering of a much enriched curriculum. Further discussions of this subject will follow in subsequent chapters.

The importance of taking the community into the planning process is emphasized by Moehlman (135). He called attention to the inadequacy and shortsightedness of the former public school attempts simply to "sell" the public on something, and urged that educators bring groups of community members into conference before plans and policies are all decided. Planning of educational programs should be a democratic endeavor.

Statewide Planning

It is commonly recognized by students of finance that if long-time planning is to become effective over wider areas, statewide measures for improving methods of financing schools will need to be placed in operation in many states (120, 121, 132, 134, 147, 152, 157). Among needed changes in methods of financing an educational program listed by Viles (155) were: (a) a long-time planning program; (b) stabilization of income through new methods of taxation; (c) improved equalization, or a state system of financing; (d) state assistance in standardizing supplies; and (e) supervision of school funds in local districts. It is interesting to note that one writer attributed the fact that the depression had not hurt the Massachusetts schools to three factors: (a) a pay-as-you-go policy; (b) school financing as an integral part of the city and town budgets; and (c) aiding poorer districts by a general fund taken from income tax receipts (126).

The many studies of the ability of the individual states to support education, of the effort that states are now making to finance education, and of the educational need in the different states, all point to the need for planning educational support on a larger scale. These studies will not be reviewed here as they are presented elsewhere in this volume.

The need for calm deliberation and planning, even in apparent emergencies, is shown in the operation of the Field Act in California, the effects of which were reviewed in a report of the superintendent of schools in San Francisco (150) and by Mullany (137). The act resulted, in San Francisco, in condemnation of eighteen steel-framed buildings which had been constructed in accordance with prevailing laws and approved by competent engineers upon many occasions. The act imposed hardships on local communities, limited school efficiency, and placed a huge burden on the taxpayers with returns of questionable worth. Despite the fact that experience had shown that buildings located on hills or rocky ground are seldom damaged, the law, enacted under pressure of special interest groups,

failed to take into account the character of the ground on which the school rests.

Planning on a National Scale

The need for planning on a national scale has been pointed out repeatedly by students of educational finance (119, 128, 136, 139, 140, 141, 144, 149, 152). The need for federal participation in the support of education is expressed in the following statement:

Without it there is not the remotest possibility of providing an equitable minimum standard of educational opportunity throughout the nation. This conclusion is based upon the following indisputable facts: (a) there are the most appalling differences in educational opportunity, both among the states and within the states; (b) these differences in educational opportunity are the result of economic conditions largely beyond the control of the states; (c) regardless of the effort made, many states will never be able to provide, from their own resources, a minimum acceptable program of educational opportunity; and (d) the recent development of corporations and holding companies, and changes in the forms of wealth, have made it impossible for the states to tax the greatest potential sources of revenue (139:156).

The Advisory Committee on Education (118) concluded: "Long-range planning for education, as distinguished from the research on which it should be based, should be regarded as an appropriate and a major responsibility of all general planning agencies, although agencies concerned primarily with education should also give greatly increased attention to long-range planning. Social and economic planning for education should be emphasized in the work of all national, state, regional, and local planning boards."

Reeves (149) pointed out that local responsibility for the costs of education cannot provide the equality of opportunity which is also an essential prerequisite for democratic freedom. The most serious difficulty is found in the less prosperous rural sections of the country, where local tax resources are wholly inadequate to support a proper system of schools. Throughout the nation, in one-teacher schools, nearly one-fourth of the teachers themselves have never gone beyond the high school. Although 70 percent of the urban youth of high-school age were in school in 1934, only 30 percent of the rural youth of this age were enrolled. The chief problem of the federal government is the millions of young people who have had to drop out of school because they lacked the clothes, the books, or the carfare to permit them to attend. The greatest need for federal aid is primarily for the purpose of raising the level of educational opportunity where it is now most inadequate. New types of federal grants to states are recommended. They include: aid for elementary and secondary education, improved preparation of personnel, building construction, administration of state departments of education, adult education, rural library service, and research and planning. Ten principles are set up for extending federal support for education without undesirable federal control.

The Research Division of the National Education Association (139) summarized the published reports on the hearings on the Harrison-Black-Fletcher Bill. Among the findings pointed out were: wide differences in the extent and quality of the school programs offered by the various states, due in most cases to economic conditions; inequalities in the ability of states to support education as revealed by Newcomer's data (143); marked inequalities in the economic ability of the states to support education which are emphasized by differences in the size of the educational task; differences in regional rate of natural increase in population which tend to perpetuate and increase educational inequalities; movement of population from farms to non-farm and urban areas resulting in a movement of wealth in the same direction; growth in corporate ownership and control of wealth, making it increasingly difficult for states to tap their own economic resources for the support of education and other public services; that educational inequalities cannot be removed even though the states adopt modern tax systems and allot a suitable proportion of resulting revenues to the financing of education; that inequalities in educational opportunities cannot be eliminated by the improvement of state tax systems; that the nation can afford to extend federal aid to education as shown by what people pay for government and for certain commodities and services; that federal aid for education would not place an undue burden upon states where federal tax collections are already relatively large; and that the mobility of population makes the education of children in all states of national concern.

CHAPTER III

The Financial Implications of School Organization¹

J. HAROLD GOLDTHORPE

RESEARCH LITERATURE on school organization was analyzed and reported in the October 1937 issue of the *Review of Educational Research* (216); the present chapter therefore reviews only studies published since July 1937, which are primarily concerned with financial relationships. In several instances reports of materials other than objective research studies have been included because of their pertinence and value.

Attendance Units and Fiscal Factors

Holmstedt (187) investigated the criteria of efficient attendance areas in Indiana by analyzing the influence of the following factors: size of school, the pupil-teacher ratio, instructional cost per pupil, transportation limitations, population density, and the relations to other local governmental units. Based upon Indiana conditions he proposed two major standards: first, a minimum enrolment of 220 pupils for six-year elementary schools, 280 pupils for eight-year elementary schools, or 400 pupils in the last four years of high school; and second, a maximum travel distance of 15 miles on transportation routes. The maximum radius of an attendance unit would thus approximate 8 miles, and include an area of 200 to 250 square miles, which, in sections of average population density, would yield an enrolment of 1,100 elementary- and 460 high-school pupils.

Hyde (190) reported a survey concerned with the reorganization of attendance units in accordance with the recent West Virginia county unit law. He concluded that the elementary-school enrolment in one- and two-teacher schools of the state would be less than a third of the previous number, and that the state index of consolidation for elementary schools would be 74.1 under the proposed reorganization plan as contrasted with 38.8 under the former district system. For high schools, the median index of consolidation would be increased from 61.8 to 86.3. Under the proposed plan the annual net saving in current expenses would approximate two million dollars, but the cost of new housing and equipment would be twelve and a half million dollars.

Lambert (200) presented a theoretical consideration of the structural factors which influence attendance areas, and pointed out that decisions concerning attendance areas should precede the establishment of administrative unit boundaries.

Lambert and Woolf (198) studied the statutes to determine the definition of transportation need, and Morphet (202) worked out a transportation

¹ Bibliography for this chapter begins on page 196.

saturation index. Friswold (182) discussed the elements concerned with transportation costs and efficiency and demonstrated the need for more accurate accounting records. Based upon the findings of twelve representative studies, Roberts (218) analyzed five major cost factors in the operation of school transportation service.

Riddle (217) made a comparative study of the effectiveness of large and small six-year rural high schools in Alabama which indicated the superiority in educational services and financial economy of the larger units. The factor of size of unit and its influence upon the organization and services of reorganized high schools was investigated in a comprehensive manner by Seyfert (220). De Silva (176) estimated a saving of \$65,000, or about 6 percent of the current expenses, in the Inglewood, California, schools by grouping children extensively on a chronological basis and raising the average class size approximately five pupils.

School Districts and School Support

There are in the United States approximately 127,000 school districts, having a half million board members, and employing a million teachers—about two teachers per schoolboard member. There are approximately 138,000 one-teacher schools.

After a comprehensive analysis of the organization of local school units in the United States, Chamberlain and Meece (167) worked out a classification involving basic and intermediate units. Various characteristics of each scheme are summarized as follows:

System of organization	Number of states	Mean number of basic units per state	Mean area of basic unit in square miles	Mean number of teachers per unit	Mean percent of school support from state sources
District-township-county	2	9,413	6.0	4.3	17.8
District-supervisory union	1	8,536	5.5	9.2	33.5
District-county	23	3,872	22.9	4.3	20.8
Township-county	3	1,440	20.5	27.4	24.0
Township-supervisory union	6	266	38.8	33.9	20.0
Semi-county	9	160	403.9	101.5	33.5
County	3	48	547.4	252.0	36.9
Evolving state system	1	15	131.0	111.3	89.5
Mean	—	2,580	24.0	7.2	26.1

In concluding their study Chamberlain and Meece referred to the following trends: (a) the enlargement of the traditional administrative unit through consolidation; (b) the development of the superimposed high-school district; (c) interposition of an intermediate unit between the basic unit and the state; (d) increasing state support; (e) gradual state centralization of administrative and supervisory authority over local units; (f) elimination of the independent district; and (g) elimination of subdistrict trustees.

In considering major issues in the organization and administration of a state school system the Educational Policies Commission (207) suggested the following questions:

1. How well is the present school district organization meeting the social, economic, and educational needs arising from modern conditions?
2. What standards should determine the characteristics of an efficient school administrative unit?
3. How would proposed reorganizations affect expenditures for teachers' salaries, transportation, and capital outlay?
4. What is the plan of the organization of state, county, and local units, and their relationships to each other?
5. What changes are needed in the legal basis of school administration and organization?

Hansen (185) proposed a realignment of the county boundaries of Utah in order to make the units conform to natural geographical and topographical areas. He also took account of trade areas and the administrative units of twelve governmental agencies and proposed six regional divisions or "provinces" which would vary in population from approximately 30,000 to 218,000, with a range in per capita valuations from \$590 to \$1,140. He estimated that the annual saving due to a reorganization on a regional basis would approximate 25 percent of the present cost of governmental services.

Further studies of the problem of governmental units of the counties and school districts in Utah were made by the Investigating Committee of Utah Governmental Units (229). This group studied constitutional limitations on school finances, the revision of the revenue structure, the possible effects of homestead exemptions, and the effects of the present financial plans. The Committee presented possible types of reorganization: (a) a large district plan, with state equalization of support for a minimum program; (b) the state unit of support, with county or large district administrative control; (c) the state unit complete for both administration and support. The Committee considered various redistricting plans, but raised the question whether a solution to the problems of school support would be found in further consolidation of school districts, and recommended the establishment of a foundation school program supported by state revenues.

Caldwell and Burke (164) studied the problem of financial support and educational opportunity in the one-teacher school districts of New York State. They were concerned primarily with the changes in these districts brought about as a result of the depression and the state's policies of transportation and equalization. They found that the district organization prevented complete equalization of educational opportunity for rural children and requested district reorganization under state leadership with adjustments in the state's financing program to assist rural schools.

Cyr (174) wrote concerning needed research on the reorganization of school districts in rural areas, and pointed out that the reorganization

of the administrative structure must meet four basic conditions: (a) conformity to accepted educational aims; (b) efficiency and economy; (c) democratic control; and (d) provision for variation and flexibility. Grace (29) listed seven criteria for the determination of the size and extent of the local administrative unit. The election, duties, and powers of elected school officials of New York school districts have been studied by Griffey (184), and he has shown how the demand for local control and regulation of the district tax rate has "rendered the abolition of the district organization almost impossible."

Cook (171) reviewed the status and development of the consolidation movement and conditions in rural areas with special attention to the problem of transportation. Wehrwein and Baker (231, 232), in two studies of the problem of the cost of public services in the zoned areas of northern Wisconsin, indicated the high educational costs in the sparsely settled areas.

Tuition policies for non-resident high-school pupils were the subject of study by Fowlkes and Skewes (181). As a long-term policy they urged that all the territory of the state be included in districts for high-school support and that the states should revise their tuition administration practices.

Kilzer (197) studied the methods of financial support of local public junior colleges. The Investigating Committee of Utah Governmental Units (228) studied the methods of financial support of junior colleges in other states and recommended the creation of seven junior college districts and an enlarged state aid plan for current expenses and housing.

Local School Units Project of the U. S. Office of Education

The most comprehensive study of the local school unit was made through the cooperation of the federal government and ten states selected by the United States Office of Education, under a grant by the Works Progress Administration made in December 1935. The published reports of the completed studies of seven of these states—Arkansas (159), California (165), Illinois (191), Kentucky (195), North Carolina (210), Ohio (213), and Tennessee (226)—are now available (January 1938).

In each of these states the workers made exhaustive analyses of the economic, educational, social, and physical factors concerned with local school organization. The data for these studies were collected in accordance with plans formulated and suggested by the Office of Education (227). The purpose of these studies, as stated in the California report, was "to make detailed analyses of existing school district organization within the participating commonwealths; to check findings against 'acceptable' standards; and to formulate proposals for the organization of 'satisfactory' local school units." The major topics considered in the various state reports are as follows:

1. Trends in school attendance and administrative units
2. Minimum standards for schools, attendance and administrative units

3. Evaluation of the present status of schools and school districts
4. Proposed legislation relating to the organization of attendance and administrative units
5. Proposed financial program and estimated costs.

In addition to the published state reports there are being prepared county reports in mimeographed form showing the present school organization, road conditions, economic resources, population trends and composition, school enrolments, teaching personnel, plant facilities, pupil transportation and educational costs for the guidance and use of local and state authorities in planning reorganization activities.

A brief summary of comparable data from six states on three items is here indicated:

	State	Units in 1935-36	Units proposed
Number of Administrative Units	Arkansas	3,134 ^a	75
	California	3,062	88
	Kentucky	281	223
	North Carolina	167	..
	Ohio	1,729	900
	Tennessee	174	95
Number of One-teacher Ele- mentary Schools	Arkansas	2,749	403
	California
	Kentucky	5,367 ^a	1,659
	North Carolina	1,472 ^a	..
	Ohio	2,387	7
	Tennessee	2,798	none
Number of High Schools	Arkansas	733	428
	California ^b	251	299
	Kentucky	848 ^a	328
	North Carolina	902 ^a	..
	Ohio	1,303 ^a	1,073
	Tennessee	640	..

Considerable variation is shown in the studies of different states, and genuine efforts have been made by the various staffs to deal with their own individual and peculiar problems. The Arkansas study (159) suggested alternative reorganization proposals upon the basis of the present 75 counties, or 280 administrative units based upon the senior high-school attendance units. A detailed analysis of the steps involved and estimated costs of reorganization in three typical counties were given.

The project staff revealed that three-fifths of the California elementary-school districts did not levy a local school tax but relied wholly upon their state aid (165). Utilizing the county lines for a framework, this report proposed the reduction of approximately 3,000 school districts to 88 reorganized units. The standard employed in making this recommendation

^a Data for 1934-35.

^b Based on study of 15 typical counties.

was a minimum enrolment of 1,500 pupils, and 45 teaching units. In a comprehensive study of the situation in 15 typical counties, it was proposed to reduce the 984 districts to 42 administrative units, thus saving approximately 2,600 teachers and almost five million dollars in current expenses, but requiring six million dollars for new housing.

The Ohio study (213) was carried out in connection with the mandate of the 1935 Ohio School Foundation Act which required county school boards for four successive years to submit plans for the reorganization of their attendance and administrative units. The State Department of Education must approve the maintenance of schools whose average daily attendance is below 180 pupils. In the first year under this law the number of school districts was reduced by 138; the number of one-teacher schools, by approximately 500; and the number of small high schools, by approximately 50. When reorganization has been completed under this plan, there would be 900 administrative units, 1,073 high schools, and only 7 one-teacher schools in the state.

County Units

The results of West Virginia's county unit law have been analyzed by Cavins (166) and Teal (225). By this act in 1933 the state reduced the number of administrative units from about 400 magisterial and independent districts to 55 counties. During the first year of the new law approximately one-fourth of the state's one-teacher schools were eliminated with few new buildings, and all schools had nine-month terms.

Euler (178) studied the unification of counties in Kansas and pointed out that the changes should come through the modification of community attitudes by means of an adult education program rather than through abrupt legislative action.

Kaser (194) analyzed administrative reorganization possibilities in 8 typical New Jersey counties and proposed the reduction of 222 school districts to 38 districts with an estimated saving of approximately a million and a third dollars, or \$8 per pupil enrolled. If this plan were extended to all the counties of the state with the exemption of cities over 20,000 population, there would be but 53 administrative units in lieu of the state's present 547 independent districts.

The State as a Unit

Despite the fact that Delaware and North Carolina have administered their public schools upon a state basis since 1921 and 1933, respectively, there is a dearth of research concerning their experience. Using the four criteria of equality of opportunity, equality of burden, stability of revenue, and proper local autonomy, Hudnall (189) evaluated the Delaware experience and concluded that the state had made notable progress relative to the first three criteria, but that there had been a sacrifice of local autonomy and there was "some evidence neither complete nor conclusive that this has been accompanied by a loss in local interest and initiative."

The experience of North Carolina under centralized administration, and state support of a guaranteed term of eight school months, has been summarized by Highsmith (186), Peele (215), Fowler (179), and Wager (230). Highsmith listed four important gains under the system and pointed out that the major defect of the plan was the legislature's failure to appropriate sufficient funds (186). Wager considered the centralization of school support and administration as part of the state's general program of the centralization of the public services of highway administration, administration of justice, police protection, and social welfare, and recognized that remote control weakened participation in government but cautioned that the real danger was "not loss of local initiative but rather civic indolence and apathy" (230).

The place of capital outlay and debt service in the state's minimum program for equalization and the plan employed in Alabama for this purpose have been studied by Morphet (203, 204). Weller (233) suggested a technic for federal and state participation in the equalization of building costs by means of an objective formula. Upon the basis of his studies of rural schools in New York State, Burke (162, 163) recommended that the state encourage the formation of larger administrative units. This would be accomplished most effectively by assuming the additional costs of general control, rehousing, and transportation, on an annually decreasing scale as economies are obtained by the larger units.

CHAPTER IV

Budgetary Procedure¹

W. W. THEISEN WITH THE ASSISTANCE OF RUEBEN P. HEUER

Outline of studies—Campbell (237) and Reusser (251) investigated the laws of the several states with reference to public school budgets. Peterson (249, 250) studied the status and effect of public hearings on school budgets. Both Seyfried (254) and Tolle (258) reported on budgetary procedure in New Mexico. Spinning and Akerly (257) described the budgets of Rochester. Jenkins (244) reported the steps taken in Tyler, Texas, to balance the budget. De Young (238) devised a checklist, and Engelhardt and Engelhardt (239) developed a score-card, for evaluating budgetary procedure. Weller (259) developed a set of standards for determining the soundness of school budgetary procedure. In addition to these, general articles bearing on the subject of school budgets have appeared in periodical literature. Two unpublished master's theses were written at George Peabody College for Teachers, one by Bolin (236) on procedure in Illinois, and the other by McCarthy (246) on budgeting in Virginia.

Concepts of a Budget

An examination of the literature on the subject leads to the conclusion that a school budget is in many respects an order for educational goods and services based upon the needs of the consumer and limited by the ability of the purchaser to pay for them. De Young (238) defined the ideal school budget as a complete financial forecast of both receipts and expenditures based on the educational plan. Flocken (240) regarded the budget as a financial plan for a future period showing the probable expenditures and the probable revenues. He stated that it is a "comprehensive recorded program, embracing, so far as financial activities are concerned, everything which it is proposed to do in the coming period." According to Fowlkes (242) the budget is the determining factor in the services which a school renders to a community. It is an interpretation of the school's policies and activities in fiscal terms. The function which the school is expected to render in the community is therefore the first consideration in the preparation of the budget. In such matters as salaries, standards of teacher preparation, scope of program, types of curriculums, teaching load, length of term and school days, use of equipment and supplies, and school organization, the budget is a reflection of administrative policies.

Holst (243) contended that when properly made and administered the budget provides authority, fixes responsibility, emphasizes relative values, organizes procedures, and promotes constructive administration. When

¹ Bibliography for this chapter begins on page 199.

well planned it leads to economy in effort and funds. The principles which govern budget making are identical with those which govern scientific administration. A sound budget cannot be prepared, presented, and administered except under an honest and intelligent administration; neither can an administrative organization function without an honest budget. Campbell (237) regarded the budget as a financial plan for carrying out the program of a school system. Its "function is to portray a complete picture of the financial activities of the school system, the effort that must be expended to support the proposed program, and the probable condition of the school's finances at the end of the designated period."

Evaluation of Budgets

Criteria for evaluating budgets and budgetary procedure were developed by Campbell (237) from an examination of twenty-six publications on budgets and allied subjects. From the suggested criteria found, six were selected as having validity for purposes of evaluating budgetary procedure and the conditions under which sound budgeting can proceed. The six were:

1. *Inclusiveness*. The budget presents a complete picture of the financial plan for operating the schools. . . .

2. *Balance* (articulation of ends with means). The budget considers the needs of all legitimate activities in the school system in relation to each other and to the organization as a whole; it contemplates the total expenditures for all purposes from the standpoint of the anticipated income. . . .

3. *Responsibility*. The budgetary procedure definitely places the responsibility for directing the preparation, the presentation and defense, and the execution of the budget on the executive head of the school system and the responsibility for its review and adoption on the board of education. . . .

4. *Fiscal control*. The budget serves as an instrument in controlling income and disbursements. . . .

5. *Flexibility*. In providing for financial control, the budgetary procedure recognizes the possibility of emergencies which necessitate such change from the original financial plan as is compatible with its safeguarding as a whole. . . .

6. *Publicity*. The budgetary procedure includes adequate provisions for informing the public of the proposals contained in the plan for carrying on the school operations; it offers the opportunity of criticism and suggestions to parties interested in the conduct of the schools. . . .

Three additional conditions were listed as necessary to proper budgetary procedure: (a) an adequate accounting system, (b) a definite fiscal year, and (c) independent audits regularly and frequently conducted.

A score-card for evaluating budgetary procedure was developed by Engelhardt and Engelhardt (239) as a part of a more complete score-card for evaluating the business administration of a school system. A total of 110 points was distributed to budget items as follows: form 15, preparation 30, justification 10, adoption 25, administration 30. Tolle (258) using this score-card, adjusted to a basis of 100 points, found that the total of the median scores allotted on the main items of the score-card to budgets in New Mexico was 36 points.

De Young (238) proposed checking the ratio of estimated receipts to actual receipts and the ratio of estimated expenditures to actual expenditures as a means of evaluating budgetary procedures. A percent markedly above or below 100 is regarded as representing ineffective procedures. He also devised a checklist of budget content and format, not only for use in evaluating budgets after they are completed and adopted but in diagnosis during the process of preparation.

Preparation of the Budget

Responsibility—A study of the literature on school budgeting reveals a strong unanimity of opinion, either expressed or implied, that the superintendent should have full responsibility for the preparation of the budget (235, 237, 238, 239, 242, 245, 257, 258, 259). In this connection Campbell (237) found that while some progress had been made since 1921 in placing responsibility for budget making on the superintendent, there was still "considerable room for improvement." Only four states have satisfactory provisions for placing responsibility for the preparation of local school budgets on the executive officers of the districts. In three other states such provisions apply to local units only. All other states fail to make the executive offices of the local school district directly responsible for the preparation of the budget.

Keister (245) reported that while the principle that the budget should be prepared by the superintendent and submitted to the board for approval or modification was an accepted one before the depression, it has since been abandoned in many small school systems. Due to loss of confidence in the ability of superintendents to spend wisely, boards in a few cases have taken over the entire responsibility of budget preparation and purchasing. Others have hampered administrative officers or eliminated services which are educationally important and have left unchanged items which could have been reduced without serious harm. Reusser (251) found that responsibility for the budget is placed in the board of education in thirty-six states, in the board and superintendent in five, and in the superintendent in three, while five did not specify.

Time of year for preparing budget—The time for preparing the budget, Reusser (251) found, is fixed by law in thirty-two states and is usually related to the date for the opening of the school year, the approval of the budget, or the levying of local taxes. The most frequently specified time for preparing the budget is thirty days preceding the opening of the fiscal year.

Campbell (237) pointed out that the "fiscal year in use may hinder or facilitate the functioning of the budget as an instrument of control. The problem of what constitutes the optimum fiscal year involves consideration of such factors as fiscal dependence or independence, the school year, the time of budget preparation and adoption, and the time of tax collection and assessment." Campbell also held that if the budget is to be effective

as an instrument of fiscal control it should be presented and adopted before the fiscal year begins. Only ten of the thirty-five states considered were found to satisfy this requirement. Eleven allow the presentation of the budget after the beginning of the fiscal year, while in the remaining fourteen the time of presentation is not specified or varies with the types of districts.

De Young (238) pointed out that states and cities which set the date for completion of the final budget too far in advance of the fiscal year often hamper budgeting procedures, but that those that fail to specify the date when the instrument must be completed are apt to encourage procrastination and hastily prepared budgets. Flocken (240) would make budget preparation a continuous process. Shortly after the approval of the last budget he would have budget estimates revised to show actual appropriations. These appropriations should appear in the next budget in order to make a comparison with the estimates of the coming period.

Basis of estimates—Except for tax limitations, provisions in law which furnish a basis for making estimates of expenditures, Reusser (251) found, were relatively rare. Students in the field appear to be in general agreement that budget amounts should be based upon the educational program (237, 238, 239, 240, 242, 243, 258, 259), and determined upon the basis of unit costs. Specific data which should be available for making estimates include: total and school population, probable enrolment increases, pupil-teacher ratios to be maintained, equipment and supply quotas, salary schedules, facts as to economic and social conditions and trends, the financial ability of the district, and receipts and expenditures of preceding years (239, 240, 242, 249, 250, 257, 259). The major factors which determine budget requirements are teaching and janitorial loads, salary schedules, capital outlay needs, debt service requirements, administrative and supervisory staff needs, building facilities, and equipment and supply needs (239, 240, 242, 259). Holst (243) pointed out that a true budget requires investigation of the justification of each unit of activity. Slater (256) held that a close approximation of the budget should be secured from statistical data regarding previous years with allowances for contemplated growth. Flocken (240) regarded the facts of past periods, especially the immediate past, as the most useful guide for the requirements and expectations of the immediate future period. He insisted that new services, before being placed in the budget, be carefully considered as to their first cost and as to their ultimate cost.

Form and organization—Two important recommendations commonly made as to the form and organization of the budget are: (a) that proposed expenditures be classified in accordance with the classification followed in the accounting system; and (b) that comparative data for preceding years be shown for income from various sources and expenditures for various activities, divisions, or purposes, together with unit cost figures and percent distributions for various purposes (237, 238, 239, 240, 242, 253, 256, 257, 258, 259). Campbell (237) recommended that the state

department prescribe in detail the forms to be used by local school units. A form for analyzing the tentative school budget was designed by Fowlkes (242).

Provisions for emergencies—Authorities commonly agree that provisions for meeting emergencies which may arise should be made under proper board control (237, 238, 239, 240, 243, 256). Emergency provisions were studied by Campbell (237) and by Reusser (251). Campbell's analysis of state provisions indicated that among thirty-five states which provide for local budgeting, eighteen have no specific provision for emergencies. Fourteen provide for restricted borrowing "usually within the limits of the anticipated incomes for the current year." Four have no legal provision for borrowing. The remaining seventeen states have specific provisions for meeting emergencies. Reusser found that the most frequent provisions for emergencies were: (a) an emergency fund; (b) provisions for additional taxes; and (c) borrowing. Anticipation warrants have been legalized in two-thirds of the states. Transfer of funds from one budget item to another is generally allowed at the discretion of the board, but specific restrictions are placed on transferring monies from one fund to another. While seven states prohibit the inclusion of an emergency or miscellaneous fund, the budget forms as prescribed by law or state officials in at least eleven states were found to provide for an emergency fund in the budget. In Kansas and California the emergency fund may be as much as 10 percent of the budget. On the other hand, De Young (238) urged four precautions in the use of emergency funds: "(1) The amount in the fund should be kept at a small percentage of the total budget, possibly less than two per cent (2) These funds should be specifically labelled for emergencies (3) The amount should approximate that of emergencies which have arisen over a period of years or which are very likely to occur. (4) Emergency funds should be used only by a vote of the board of education."

Approval and Adoption

Publicity—Students of budget practices strongly favor wide publicity for the proposed budget (237, 238, 239, 243, 253, 256, 257, 259). Campbell (237) held that unless publicity constitutes a part of budgetary procedure the public loses its share in the financial control of the school. He found that efforts in this direction still fall far short of being satisfactory and recommended that appropriate publicity be required by law. Ackerly and Spinning (235, 257) reported that mere publication of the budget served to check expenditures in Rochester. Copies of the budget of some twenty pages, containing halftone illustrations, charts, and letterpress, were carried into the homes by the children. The number of copies printed has ranged from 60,000 to 30,000 over a period of years. The publication of this type of budget at a cost of approximately five cents per copy has seemed to be a good means of developing an informed public

opinion with regard to schools. It is quite generally held among authorities that justification should be furnished for increases or decreases. Types of publicity used in connection with budgets were discussed by De Young (238).

Reusser (251) found that budgets are usually published in newspapers before adoption to allow for hearings and protests. Campbell (237) found nineteen states which require newspaper publication, either of the budget or of the notice of meeting for adoption, though not always in all districts. In some instances the budget is merely placed on file for inspection either as a matter of law or practice. Eleven states have statutory provisions for the reporting of school budgets at the annual school meeting which apply to one or more classes of schools. Sixteen states make provision for public hearings.

Peterson (249, 250) investigated the status and effect of public hearings on school budgets. Although twenty-five states have enacted some type of public school hearing law and eight others are required to follow a procedure which approximate it, none make adequate provision. The tendency to establish such laws has been positively accelerated since 1929. He found the response to hearings in 1936 was not good. One-half of the districts reported that no citizens were present at the hearing; the mean attendance was twenty-seven. As a result of the public's failure to take advantage of its opportunity, school budget hearings were of little or no value in a majority of city school districts. Hearings had little effect on budgets; of all city school districts 90.6 percent made no changes as a result of the hearing. In the judgments of 66.7 percent of the superintendents, public school budget hearings are desirable. Recommendations were made that laws be changed, if necessary, to include adequate provisions for the publicity of the school budget and its public hearing and that the hearings be held in advance of the beginning of the school fiscal year.

Reusser and Hamilton (252) found that with few exceptions courts have held quite uniformly "that even though a hearing is held and the public does appear and make suggestions, the board of education is in no way bound thereby." Flocken (240) held that if there are controversial matters in the budget it is wise to have a special public meeting giving persons representing all views a chance to speak.

Approval—Reusser's study (251) indicated that the budget is commonly presented to some individual or board for checking and correction of errors and for increasing or decreasing estimates. It is then presented to the budget making authority or the electors for final adoption, and finally to city, county, or state authorities, for making the necessary tax levies. That the board should have final authority to adopt the budget was pointed out by Campbell (237), Engelhardt and Engelhardt (239), and Tolle (258). Campbell (237) found that in only twenty of the thirty-five states considered was the entire responsibility for review and adoption placed upon the local board of education. The other fifteen either provide

that the local board share this responsibility with some outside body or place the entire responsibility on an outside body. In New Mexico where, according to Campbell, the state tax commission fixes the final budget allowances, Tolle (258) found that budget requests in general were not granted as made by boards of education.

Administration and Control

The studies of Campbell (237) and Reusser (251) indicated that the laws of most states place responsibility for the execution of the school budget on the board of education. Reusser's study revealed that while schoolboards are charged with responsibility for administering the budget in forty states, responsibility in practice is frequently delegated to the superintendent. Large numbers of districts in each of twenty-six district-unit states were found, however, in which boards of education must administer whatever budget there may be without the help of an executive officer. While in nearly half of the states boards of education were found to be partially dependent upon other agencies in the determination to their budgets, relatively few seek to exercise this control through the budget. Most states use a maximum tax levy limitation to control expenditures. Some states limit boards of education rigidly to the adopted budget. In others boards pay little attention to the budget after it is adopted, since the law does not compel them to live within it. Laws are less specific in matters of budget administration than in budget preparation, presentation, and adoption. Reusser and Hamilton (252) reported that "it seems to be quite uniformly held that the boards of education are in no way limited in their expenditures or levies as long as such levies do not exceed the statutory limit."

A number of significant recommendations have been made with respect to the control of budget funds. Campbell (237), Engelhardt and Engelhardt (239), Slater (256), and Tolle (258) proposed that the superintendent be given full authority to carry out the provisions of the budget. Campbell (237) held that once adopted the budget should be binding on all officials for the definite amounts which have been appropriated. To prevent expenditures from exceeding appropriations, various authorities urge that budgetary controls be provided for each ledger account (237, 238, 240, 248, 259). Flocken (240) proposed that whenever necessary, accounts representing encumbrances against appropriations be kept. He would place responsibility for recording the operation of the budget and preventing overdrafts on the person in charge of accounts.

The Finance Division of the New York State Department of Education (248) recommended that as a means of effective budgetary control, proposed expenditures be checked against appropriations to determine whether sufficient funds are available for the purposes concerned before making actual commitments. To facilitate control, all proposed expenditures, it is

pointed out, must be charged against the proper account. Unless this is done book balances will not represent the actual amount available.

Skinner (255) regarded accrual accounting as a "foundation rock" of budget control. He quoted the auditor of Morton Township, High School and Junior College, Cicero, Illinois, as follows: "The necessity of preparing a budget that sets forth accurately all items of income and a detailed analysis of anticipated expenditures, and the necessity of establishing a system of control that will effectively limit appropriations of funds to budget figures, cannot be overestimated. To the absence of such a budget and such a system can be attributed much of the responsibility for the financial stress which the board now faces."

Fowlkes (241) would have the business manager exercise "eternal vigilance" over the budget. "Admonition, warning, and notice of danger must be forwarded by the business manager to all school staff members who are in danger of violating the established budgetary procedure."

Restrictions which Slater (256) would impose are: (a) that it be made mandatory to administer the schools' activities in accordance with the budget as finally adopted; (b) that an officer responsible to the board certify that the necessary funds are available and that the proposed expenditure is in accordance with the budget before commitments are made; (c) that each major expenditure be reviewed before it is undertaken; and (d) that commitments and encumbrances be recorded against the related items of the budget.

Reusser (251) found in seventeen states which reported on the disposition of unexpended balances at least three methods in use: "(a) appropriating such balances to the next fiscal year; (b) lapse of appropriations or the reversion of any balance to a general fund; and (c) transferring such balances. Ten of the states reporting provide for carrying over of balances to the next year, and seven states provide for reverting of such balances to be redistributed in the next year's budget." De Young (238) held that there should be a margin of safety in favor of the child rather than the taxpayer, and that therefore the accumulation of modest balances is superior to the incurrence of deficits.

Needed Research

Further research is needed to determine the nature of the educational program which should be offered in various localities and under various conditions, together with a study of the factors involved in providing a suitable program. Research is needed also to determine how economies may be effected in educational expenditure. Improved planning will result when such information is available to every planning body.

There is a marked need for refinement in cost determination practices. Unit cost figures offered to the public commonly contain several variable elements whose weighting is unknown, thereby invalidating the figures for purposes of accurate comparisons. The Michigan Education Association

(247) pointed out that research is needed also to develop technics for adequate appraisal of the results of education so that costs may be measured in terms of product.

Reusser and Hamilton (252) pointed to the need for extensive and comprehensive research by persons trained in both law and education, or by educators working in conjunction with legal specialists in the field of school laws and their recodification. They pointed out that unless any contemplated piece of legislation is drawn so as to harmonize with the provisions of both school law and general law, its purpose may be defeated and it will merely add another block to the already confusing patchwork of school legislation. They expressed the opinion that educators may expect little relief from antiquated and contradictory laws until they are able to appear before legislative bodies with a complete legislative program.

CHAPTER V

Accounting: Financial and Property¹

CHARLES H. GILMORE

THERE has been little research in the field of financial and property accounting since the last treatment of the subject in the *Review of Educational Research* for April 1935. Most of the recent studies dealing with the problem simply present descriptions of accounting procedures and offer suggestions for the use of data made available by effective accounting systems.

Apparently during the period since January 1935, there has been improvement in the financial accounting systems of many local school units. This improvement has not been the result of basic research conducted during the period by state and local school officers but has resulted from the fact that accounting systems previously developed have been adapted to meet the needs peculiar to each state or local unit.

State Systems of Financial Accounting

Campbell (264), in what was primarily a budgetary study, reviewed briefly the recent trends in the development of accounting systems. He pointed out that since 1915 several states have attempted to develop state-wide accounting systems for local school districts. In some states, accounting systems are prescribed by state departments of education while in others local units are allowed to use their own discretion. In at least eight states the school accounting system is regulated by agencies outside the state education department. Campbell found from an examination of school laws and regulations of state departments of education that only fifteen of the thirty-five states studied required the use of a uniform accounting system for local schools, and in certain of these states all classes of districts are not required to conform to the state system.

Akerly (260) expressed the opinion that almost every school system is suffering from lack of improved accounting methods. He believed that national, state, and local officers should work together in developing a better system of cost accounts and greatly improved budgets. Such improvements are necessary in order to make progress in cost finding and in the preparation of comparative statistics.

Cammack (263) reviewed the procedure followed in Kentucky in developing and inaugurating an accounting system for the school districts of the state. Prior to July 1933 there had been little regularity in financial procedures with the result that the records of expenditures for public education were incomplete. After two years of study of the financial

¹ Bibliography for this chapter begins on page 200.

procedures, an accounting system was developed which was adopted within the course of a year by every district in the state. The records included: (a) "the record book" for minutes of board of education; (b) tax collector's report for a monthly report to local board of education; (c) treasurer's monthly report to local board of education; (d) the financial record book for receipts and expenditures; (e) the budget form; (f) the order on the treasurer; (g) requisitions, purchase orders, and claims; (h) monthly report form; and (i) annual financial report.

Cammack pointed out that the accounting procedure had resulted in improving budget practices. Since all the districts were under a uniform system, for the first time, comparable data are available and the state department of education is better able to assist local units in financial administration.

The Florida School Code Committee (269) emphasized the necessity for adequate accounting by trained personnel. It called attention to the fact that three-fourths of all counties spend more than one hundred thousand dollars annually, while six counties spend from one to four million dollars annually. An analysis of the present accounting system revealed the chief limitation to be that expenses are charged when they are paid instead of when they are incurred, with the result that expenses of one year are often charged to the succeeding year, thus distorting the apparent expenses. Several proposals were made for improving the system: (a) expenditures should be charged to the fiscal period in which they were incurred; (b) the system of accounts should be prescribed by the state board of education; (c) the system should be extended to include petty cash, student activity funds, and cafeterias. In regard to student activity funds the Committee proposed that the custodian of each fund should keep an accurate account of monies received and disbursed and make a detailed report to the county board of education each month.

The Finance Division of the New York State Education Department, after several years of field service among school districts in accounting, evolved a bulletin on school accounting documents (276) for the voluntary use of school districts. This bulletin dealt with procedures and forms—the systematic arrangement and use of official documents related to business transactions. It is not a manual dealing with the bookkeeping phase of accounting. Experimental work in the bookkeeping area is now being carried on in selected districts. In 1937 basic minimum regulations concerning accounting were prescribed by the commissioner of education for all school districts except cities. The past and current developmental work in accounting in New York is important as a combination of research and field service in the area.

Accounting and Budgeting

In recent years, as improvements have been made in business practices, more consideration has been given to the linking of accounting and budget-

ing. Theiss (280) defined accounting as the science of recording business transactions properly and accurately, and of making interpretations of the records for management. Budgeting applies cost accounting principles to the control of all operations.

De Young (266) pointed out that the interdependence of accounting and budgeting is not always realized by many school officers. The budget provides the initial entries in the account books and serves as a basis to check "anticipations against actual occurrence." A complete accounting procedure, therefore, becomes the basis for effective budget making and budget execution, or control. He calls attention to the fact that "although the tendency in accounting is to emphasize dollars and cents, one aspect of it is receiving more and more attention in recent years; namely, educational accounting, one phase of which, child accounting, is inextricably related to genuine budgetary procedure."

De Young's discussion of cost accounting emphasized the value of unit costs in public school accounting and budgeting but pointed out that those responsible for budget making do not generally convert them to use. The compiling of unit costs is expensive; they are difficult to calculate, and necessitate adequate clerical help and copious data from former years. He emphasized the need for further research to develop cost accounting procedures which may be applied by the administrators in smaller school systems.

Financial Accounting for Cafeterias

Bryan (262) emphasized the fact that unsuccessful management of school lunchrooms and cafeterias constitutes an admission of inability to deal with changing conditions. Records for cafeterias relate to three major aspects of food-cost control, namely, control of personnel, control of food, and control of money. Records not ordinarily considered as a part of the financial accounting system are deemed essential in food-cost control. For example, kitchen and service records, such as menu and counter records, are required for accurate knowledge of amounts and costs of foods prepared and served.

Bryan presented typical record forms proposed for a small cafeteria operated by an individual school; a large cafeteria operated in the same manner; and a centrally managed system of cafeterias. Facsimiles were presented for such records as: request for price quotations, purchase order, daily cash record, voucher, cash-book, and requisition. In developing these record forms, special consideration was given to the probable time available for record keeping by those managing cafeterias of the various types. A less complex system of accounting was outlined by Quast and Alcott (278).

Gregg (270) pointed out that the success in carrying out the policies for the cafeteria is due principally to the procedures of cost accounting and purchasing. In the Pittsburgh system weekly and monthly statements

are made to all schools as a basis for cost accounting. The data shown on the weekly statement are: (a) receipts from sale of food, (b) cost of food used, and (c) percent cost of food. From this weekly statement it can quickly be determined when costs are running too high. The cause can be found and corrected at once. A similar procedure was proposed by Schumann (279) and Idell (272) except they recommended that a detailed record be kept of the *daily* food and overhead costs so that expenses can be compared with *daily* receipts. A monthly statement is then prepared which gives all information necessary to determine the financial status of the cafeteria.

Property Accounting

Weller (281) emphasized the need for a periodic study of the business department of each school system. He listed the following as the essential questions for which answers should be secured in an analysis of property accounting: (a) Is a property ledger kept in which there is an itemized property register that shows the capital values for all buildings, sites, and equipment? (b) Is there an annual inventory of all school property? (c) Is depreciation and appreciation of plant computed annually?

Baldwin (261) pointed out that "... the problem of accounting for property dollars does not usually call for a quick solution and is, therefore, laid aside in the press of more immediate things, to await a more convenient season." An appraisal of school property usually costs less than one half of 1 percent of the "Cost of Reproduction New" of the properties appraised. In very large properties the cost may be as low as one tenth of 1 percent. Baldwin called attention to the fact that once the inventory data are available the details may be priced and repriced from time to time as the basis of value changes.

Hibbert (271) found that inventories of school equipment are taken by approximately three-fourths of the large city school systems, most of them being made annually. He proposed a perpetual inventory of both supplies and equipment. He pointed out that such an inventory permits of frequent checking of supply costs and makes it possible to have a report monthly, or at any designated period, indicating the cost of supplies delivered to schools. He also proposed that "equipment inventories should be kept for each department of each school."

De Young (266) pointed out the need for a property accounting record involving both the value and the depreciation of each item listed. Such a record, combined with a periodic appraisal of the property by an outside specialist, aids budgeting through careful calculation of depreciation costs.

Bryan (262) proposed for small cafeterias that a monthly physical inventory of stores be used to replace the perpetual inventory which should be used for large individual cafeterias and centrally managed organizations. Facsimiles were presented to show the types of property accounting forms that are proposed.

According to Farnam (268) physical inventories of school lunchrooms should be taken twice a year. Space should be provided to show the loss since the last inventory, and the estimated needs for the next semester. In addition to these facts the unit price and the total price of each item should be recorded. From these data the depreciations may be calculated and a reserve fund may be built up for replacements.

Survey of Business Administration

Engelhardt and Engelhardt (267) pointed out that "the administrative officers of the public schools must be constantly on the alert in the justification of their procedures and practices. Facts must be at hand, or readily available, for the maintenance of a favorable public attitude." These authors developed standards for the objective investigation of the business affairs of school systems. These standards were based upon research when it was available, on writings of experts in the field, and on the judgments of instructors. Scores, which were applied to the items, were calculated from judgments of more than 200 school officials.

In the system suggested by Engelhardt and Engelhardt financial accounting is analyzed under: (a) accounting system, (b) completeness of records, (c) separateness of funds, (d) bookkeeping efficiency, and (e) financial statements. It is allocated 95 points out of a possible 1,000 for the entire business administration. In the same way, property accounting is analyzed under: (a) scope, and (b) methods; it is allocated 20 points out of 1,000.

Weller (281) listed fourteen major items which should be studied in an investigation of the business department of a school system. Among these items are: (a) payroll procedure, (b) purchasing management, (c) property accounting, (d) insurance, and (e) cafeteria. He listed the questions that should be answered for each of the major items.

Financial Accounting for Institutions of Higher Education

The National Committee on Standard Reports for Institutions of Higher Education (275) pointed out that the financial data for such institutions must be suitably analyzed, and items which differ in purpose and use must be segregated rather than merged into a meaningless total. The accounts should be so classified that each of the different items will have a definite meaning and will fit into its proper place in the whole picture.

The Committee emphasized the fact that two distinct functions should be performed by an effective accounting system, namely: (a) the furnishing of basic data for reports concerning the financial conditions and the operations of the institution; and (b) the determination of the fidelity of the officers responsible for the handling of institutional funds.

The steps involved in the procedure of making available the data needed by the directing bodies and the controlling executives were described by the Committee.

Morey (273) suggested six general features that should be kept in mind in considering the important qualities of the bookkeeping system:

1. The accounts should be so arranged as to produce as readily as possible the information needed for the proper kinds of reports for all purposes.
2. So far as possible, the content and arrangement of the accounts should correspond to the terminology and arrangement of the budget.
3. The financial reports should agree with the books, and should be susceptible of ready reconciliation with them.
4. The records and books should be coordinated so as to form a unified system, following the double-entry plan, and should constitute a system that measures up to sound principles of accountancy.
5. The records should be complete as to all essential facts.
6. The procedures should be familiar to more than one person and, therefore, should not be dependent solely on one individual for successful operation.

Summary

Increased consciousness among federal, state, and local educational officers of the need for comparable financial data from the various local units has been a stimulus to improve accounting procedures. The situation in Kentucky as described by Cammack (263) is an example of such improvement. Apparently there is still a need in many local units for improved accounting practices. Property accounting seems to be one of the phases which has not received adequate consideration. One of the pressing needs seems to be to improve accounting procedures so that refined data will be available for unit cost studies. Further research should be conducted to develop cost accounting procedures which may be applied by those administering the smaller school systems.

CHAPTER VI

Educational Costs and Their Analysis¹

CHARLES H. GILMORE

THREE OBSERVATIONS stand out in an analysis of the recent cost studies: (a) The economic depression resulted in at least a temporary recession in the trend of rising educational costs. (b) There are extreme variations among the states as well as the local units in costs per pupil, for similar items of expense. (c) More attention is being given to the high cost of the small school when service rendered is taken into consideration. A number of states are concentrating on the elimination of the small school in an effort to expend funds so as to provide a more effective program.

Changes in Cost Per Pupil

A report by Blose and Deffenbaugh (283) showed that in 1934 the annual cost per pupil in average daily attendance ranged from \$22.60 in Arkansas to \$124.13 in New York. There were twelve states in which the cost was less than \$45.00 while there were seven states in which the cost was more than \$90.00 per pupil. The serious effect of the economic depression on the financing of elementary and secondary education is shown by the data presented. In 1930 the cost per pupil in average daily attendance for the United States was \$86.70; in 1932, it was \$81.08; and in 1934, it was only \$67.48. From 1932 to 1934, the cost per pupil decreased in every state except Mississippi. The decrease ranged from 3.4 percent in Alabama to 31.5 percent in Michigan. There were nineteen states in which the decrease per student was more than 20 percent.

In an analysis of costs per pupil in city and exempted village school districts of Ohio for 1929-30 and 1934-35, Holy (293) found decreases similar to those mentioned above. The total current expense per pupil decreased in the cities from \$104.89 to \$81.10, and in the exempted villages from \$101.84 to \$63.83.

In a study of the financing of education in North Carolina (296), it was shown that the cost per pupil in average daily attendance increased from \$10.72 in 1910 to \$42.67 in 1930, but decreased to \$25.29 by 1935. Similarly, it was found that only \$5.97 was spent for each pupil enrolled in the schools of Tennessee in 1901; by 1931 the cost was \$42.36, but in 1936 it was \$35.00 (300). Like trends were found for Ohio (297), and for Arkansas (282).

A number of studies have shown variations in the cost per student among the districts of a state. It was shown that two county school districts in Kentucky spent less than \$15.00 per pupil in average daily attendance

¹ Bibliography for this chapter begins on page 201.

while the cost in one independent school district was approximately \$134.00 (295). One district in Utah spent an average, over a five-year period, of \$38.37 per pupil in average daily attendance while another district spent approximately \$100.00 (302). In a study of the local units of Tennessee (300), there was shown a range in cost per elementary pupil from \$12.19 to \$54.57. It was found that 83.8 percent of the local administrative units in Arkansas spent 20 cents or less per pupil per day for current expense, while only 1 percent had a cost of 51 to 75 cents, and one unit had an expenditure of from 76 cents to \$1.00 (282).

In a study of expenditures per pupil in urban and rural schools, Herlihy (292) reported large variations for urban and rural schools in different sections of the country. In comparing per pupil costs for the six major items of current expenses for all sections combined, he found that for every item except coordinate activities and auxiliary agencies the urban schools spent more than twice as much per pupil as did the rural schools.

In an analysis of trends in public school costs in New York State, Soper (299) showed that in 1870 it cost the people approximately \$20.00 a year to provide schooling for each child in average daily attendance. By 1920, just fifty years later, the per pupil cost for total expense had risen to approximately \$80.00. In 1930 the cost was \$209.74, but in 1934 it had dropped to \$156.48. Increased high-school enrolment, higher salaries for teachers, and an improved educational program were in the main responsible for the increased cost. Such indications of an improved program as the following were found: From 1880 to 1933 the value of school property had increased 30 times; the number of volumes in the public school libraries had increased seven times. Teachers as a group are better prepared for their jobs than those employed even ten years ago. Medical inspection, nurse service, dental service, and transportation, which are now general, were seldom provided prior to 1918.

Costs Per Pupil for the Six Major Items of Current Expense

Comstock (286) found extreme variations in annual cost per pupil for the various items of current expense even among the cities of comparable population. For example, in 1936 the range in the annual cost per pupil for general control among the cities of over 100,000 was from 94 cents to \$6.24; for instruction, from \$38.23 to \$113.46. Some cities apparently are doing very little to maintain their plants. For the cities between 30,000 and 99,999 the range per pupil for maintenance was from 37 cents to \$9.26.

Of the past six years, 1930 shows the greatest per pupil cost for each of the major items of current expense in all groups of cities except those of the highest population. In the cities of 100,000 population and more this was also true for the cost of general control, operation, and maintenance. From 1935 to 1936 there was a decided increase in each item of current expense in the average of the combined groups. This increase ranged from

5.8 percent in the cost of operation of plant to 15.5 percent in the maintenance of plant.

In a study of Utah school districts (302), it was found that it cost from five to seven times as much per pupil for general control in some districts as others. The conclusion was that the services purchased by these expenditures also differ greatly in the degree of continuous trained leadership provided. The data regarding expenditures for instructional service revealed that four districts spent twice as much for instruction as did the lowest. The range in per capita costs among the districts was from \$27.45 to \$63.37. After a study of the expenditures for coordinate activities he concluded that there seems to be no adequate minimum program and standard to guide the expenditures of Utah districts for this item. Similar conclusions were reached regarding the other major items of expense.

It was pointed out that an analysis of the trends in current school costs for Arkansas shows clearly the growth of the school system from small to larger schools with the increasing expenditures for items other than teachers' salaries (282). In 1900, 90 percent of the current operating cost went to salaries for teachers while in 1935 the allocation was 74 percent. In 1930 transportation accounted for 3.5 percent of the current expenditures, while in 1935 it had increased to 7.5 percent. In other words, as schools have become larger the expenditures for maintenance, operation, insurance, instructional materials, and administrative expense have tended to increase while the proportion of funds allocated for teachers' salaries has proportionately decreased.

Urbanization and Public School Costs

Burke (284), in a study of New York State, found that the average per pupil cost for elementary and secondary education in areas over 25,000 located within the New York metropolitan area was \$140.00. This cost was found to be 25 percent higher than that of cities of over 100,000 in the United States; 30 percent higher than that of cities 10,000 to 99,999; and 39 percent higher than the cost in cities of 10,000 to 29,999.

Burke summarized his findings as follows: "(1) The per pupil cost of public day school elementary and secondary education in New York State is determined by the cost in the New York metropolitan area. (2) Per pupil costs for public education in large metropolitan areas like New York and London are much higher than those in the smaller urban centers. (3) The cost per pupil for public education tends to decrease with the size of the urban centers. (4) Comparisons of per pupil costs are dangerous unless all related facts are available."

Cost of School Transportation

It was discovered that even though the current operating cost for transportation in North Carolina had increased from \$284.884 in 1921-22 to

\$1,883,744 in 1934-35, the cost per pupil had decreased during this period from \$13.09 to \$7.00 (296). The average daily cost of transportation per pupil in 1934-35 varied among the counties from 2 cents to 8.5 cents. Data were presented to show that the cost per pupil for transportation had decreased over a period of years in Kentucky (295). In 1929-30 the annual cost was \$19.50 while in 1934-35 the cost was \$13.06. Considerable variation was also found among the counties in the amount expended per pupil for transportation, the range being from \$5.96 to \$69.75. There was found a similar variation among the counties of Tennessee, where the range per pupil was from \$2.73 to \$39.40 (300). The average for the entire state was \$13.58.

In a study of local school units in Ohio, Holy and McKnight (297) revealed that the state average for the cost of transportation per pupil was \$20.23. In one county the cost figures for the various districts ranged from \$13.54 to \$53.60. The authors concluded that transportation costs can be lowered and better service can be rendered when buses are owned by boards of education. In a study of the California schools (285), the cost per pupil for transportation in the state was found to be \$16.41 per elementary pupil and \$22.32 for each high-school pupil. There was found to be a range among the counties from \$7.11 to \$48.18 per elementary pupil and from \$6.55 to \$75.91 per high-school pupil. The Florida School Code Committee (287) compiled data which showed variations similar to those mentioned above. In 1925 the annual cost per pupil for transportation was \$29.11, while in 1936 the cost had been reduced to \$16.70. The range in the cost per pupil per day ranged from 4 cents in one county to 29 cents in another.

Cost of Small Schools

In Kentucky there is apparently little relation between size of elementary schools and instructional cost per pupil (295). The one-teacher school cost approximately as much per pupil as did the six-to-nine teacher school. An analysis of the costs for high schools showed that the larger schools have the lowest per capita instructional costs. It was pointed out that the instructional cost per pupil in the white elementary schools of Tennessee varies inversely with the size of school (300). A similar situation was found with reference to the high schools. In studies made in Illinois (294) and in Ohio (297), the conclusion was reached that the small school was too expensive for the service which it is rendering.

A study conducted by the Wisconsin Teachers Association (303) sought an answer to the question, "How much money (if any) could be saved by combining the smaller rural schools?" It was found that the average cost of maintaining a one-teacher rural school, with 15 or fewer pupils, in Wisconsin during 1933-34 was \$828.50. The average cost of maintaining a transport school was \$720.77. (A transport school is one which does not employ an active teacher but the board arranges for the instruction of the

children in a neighboring district.) It was determined that by eliminating 1,000 schools of 15 or fewer pupils and transferring the pupils to other districts, \$525,000 per year could be saved.

Gaumnitz (288) found that there are rural schools in which the education of a child is costing the public more than \$1,000 per year. According to his findings, there are 250 schools which serve a total attendance of one child each, while there are 7,000 schools which have five or fewer pupils. He pointed out that only teachers with limited training can be employed in these schools because salaries are necessarily low.

Gifford (289) made a study of 24 schools having secondary departments in Jefferson County, New York, to determine whether or not the cost per pupil in public schools maintaining secondary departments increases or decreases as the size of the school increases. He also studied costs with reference to the scope of the curriculum. Instructional costs per pupil were found to be highest in schools of less than 150 pupils, lowest in those of 150 to 700 pupils, and medium in the schools which had more than 700 pupils. Total costs per pupil followed the same pattern.

A study of small schools somewhat different from those already discussed was conducted by Powell (298). The main purpose of his investigation was to discover the relation between current school expenditures and educational outcomes in one-teacher schools. The equivalent-groups method of investigation was used. For intensive and detailed investigation, one county was selected as typical of the state. The one-teacher schools of the county were divided into a higher expenditure half and a lower expenditure half. The groups were then equated in supervision and "outside of school" influences in general. By the use of tests the pupils were measured in certain traits. The findings of the study showed that the pupils in the higher expenditure groups were superior in every measure made. Expenditures and returns in the form of pupil achievement were found to rise and fall together.

Junior High-School Costs

Gooch (290) attempted to find an answer to the question, "What are the factors affecting the cost of education in the junior high-school type of organization as distinguished from the traditional type?" The study was limited to current expense per pupil in average daily attendance in junior high schools organized on 6-3-3 basis, in cities of 5,000 or more, in six eastern states. The findings indicated that the per pupil costs in Grades VII to IX are substantially greater than those in the Kindergarten to Grade VI regardless of whether a school system is organized on the 8-4 or 6-3-3 basis. Gooch concluded that the data suggested that in actual practice there are no inherent factors in either the 6-3-3 or 8-4 types of organization which result in significantly different per pupil costs for current expenses.

Cost of Textbooks and Supplies

Thompson (301) conducted a study of the per pupil expenditures for textbooks and supplies made by the towns in Connecticut. The analysis covered the period from 1929 to 1935. It was found that one town spent an average of 50 cents a year per pupil for elementary textbooks while another spent \$4.57. For stationery and supplies the range was from 41 cents per pupil to \$5.58. The cost of educational supplies varied among the school districts of Utah from 96 cents per pupil in one district to \$4.85 per pupil in another (302). The annual expenditure per pupil for textbooks also varied from no expenditure in one district to \$2.77 in another.

Suggestions for Future Cost Studies

An analysis of the cost studies which have been made indicates a need for investigations into the reasons for the extreme variations among the local units in the cost per pupil for the various items of current expense. For example, there were variations among the counties of Kentucky in the amount expended for transportation per student from \$5.96 to \$69.75 (295). Such differences call attention to the problem of equalizing instructional opportunity, but they should be supplemented by more detailed studies describing the conditions and results attendant upon these practices.

There is need for a more thorough investigation of all related facts before comparisons of per pupil costs are made. Burke (284) pointed out that consideration should be given to such problems as: (a) the kind and quality of services rendered; (b) the climatic, geographic, and other factors which affect costs; and (c) differences in the methods of accounting for school funds.

CHAPTER VII

Financial Reporting¹

W. W. THEISEN

PREVIOUS SUMMARIES OF RESEARCH in the *Review of Educational Research* which bear directly upon the subject of financial reporting have been limited to Alexander's single page review (305) of research in the field of public relations in the issue for April 1932. He pointed out that real researches applying to fiscal reporting had been very few in number and that there had been little scientific evaluation of materials and methods. Researches since then bearing on this field have been no more numerous. A brief survey of some of the earlier studies and discussions in the general field of school reporting may not, therefore, be out of place in this issue.

Early Efforts To Improve School Reporting

Students of educational administration long ago began stressing the need for improving the quality of school reporting. Among the early ones to do so were Snedden and Allen (345), Strayer and Thorndike (347), Cubberley (309), Hanus (316), and Alexander (307). Alexander (307) cited Snedden and Allen's conclusion that school reports were not read because they were not intelligible to the ordinary citizen. He referred also to a study by Hanus in which prominent citizens in Boston were asked whether they had seen a report of the schoolboard or of the superintendent within the last two years. Approximately 70 percent of those who replied answered "no." Alexander added: "The school executive has as great need to appeal to the layman with statistical matter on schools as do any of the publicists in other fields. In particular, he has practically to make the same appeal for funds as do workers in these other fields."

Cubberley (309) wrote: "The public only takes seriously those presentations of school needs and conditions which are based upon carefully-collected and well-interpreted facts. Only by the use of such data, set forth by means of tables, colored circles, curves, black-line graphs, or other graphic representations, can the people be made acquainted with the whole work of the school, be made to realize where the school breaks down, be brought to understand the necessity of certain adjustments within the school, be brought to appreciate the propriety of expending such large sums of public money upon education."

Among a later group who expressed similar views were: Neale (335), Reynolds (341), Hines and Jones (317), Miller and Charles (324), Moehlman (327), Farley (313, 314), and Engelhardt (311). Farley (313) charged in substance that state reporting had advanced little in three-

¹ Bibliography for this chapter begins on page 202.

quarters of a century following Horace Mann. Despite the repeated counseling and advice of students in the field, it is only in widely scattered instances that present school reporting approaches a satisfactory standard. For reasons not yet clearly established, school executives in the main have been slow to follow the advice given or to apply the principles and rules found effective by commercial advertising and sales promotion agencies. As expressed by Engelhardt (311): "Commercial enterprises, as is to be expected, have made the most rapid strides in the use of advertising and publicity in bringing their goods and services before the people. Every known science and art have been brought to bear on the problem and have made some contribution to this field. Increased competition in business has been fundamentally responsible for the conspicuous progress which has been made in advertising methods. Education has been somewhat slow to appreciate fully the possibilities in publicity and the obligations the schools have in bringing to their patrons the problems, the work, and the achievement of the schools."

A possible explanation of the failure to make general application of advertising technics was offered by Miller and Charles (324) who expressed the view that "The public school system as a tax-supported institution in a democracy cannot set up and expend an advertising budget to present the advantages and claims of the education it offers. Legal and moral justification of such expenditure could be seriously questioned. Such a process would necessarily involve a selection of the facts to be presented in the advertisement, and selection of facts by those in charge of the schools is closely related to a censorship fundamentally un-American. The public, willing enough to have presented to it the advertising of private business concerns, is of a different temper when it comes to accepting the advertising, paid for out of public money, of selected facts which the administrators of public business choose to set before it."

Whether from lack of understanding of efficient reporting technics or of the possible bearing which adequate reporting may have upon financial support for schools, or whether from reluctance to apply commercial practices, or otherwise, neither high-grade forms of school reports nor wide dissemination of such reports are common in administrative practice.

Helpful suggestions for improving the quality of financial recording and reporting were included in a bulletin prepared by the Research Division of the National Education Association in 1927 (334). In it Engelhardt and Mills (334: 233-44) outlined essential financial records. Meredith (334: 284-86), in discussing state reports to the public, recommended that the state office of education from time to time issue special research reports based upon financial studies of pupil costs. Phillips (334: 289-321) discussed the report forms used by the United States Bureau of Education for collecting fiscal data from state and local school systems. These forms with their accompanying instructions, it is commonly agreed among school administrators, have served to bring about greater uniformity and comparability in school costs.

The point of view of the state with reference to reports was stated by Simpson (334: 280-83): "Whatever may be the extent of the state department's charge for direct educational administration or the administration of controls, it must be admitted that a system of reports presenting cogent data will be essential as a basis for action. Furthermore, the all important function of leadership, whether it be concerned with supervisory service, research or publicity, will be strong or weak in proportion to the extent to which this leadership is based on adequate data from the local units for whom this service is purposed. Leadership service must know where local units are, educationally, before it can proceed to improvement."

Ford (315) recently stated the case for small cities: "Superintendents in large cities present annual reports to their boards of education, but few superintendents of smaller cities have done so, probably because they believe that in a small community, board members are intimately acquainted with the details and policies of the school system. Experience over a number of years has convinced me that there is need for an annual report in small cities and even in villages."

Principles and Objectives

Underlying principles and objectives of educational interpretation were treated in the Fifteenth Yearbook of the Department of Superintendence (330). Four principles were listed as fundamental: (a) educational interpretation is a proper and an important part of a modern educational program; (b) it includes a judicial presentation of things as they really are as well as a presentation of things as educators hope they will be; (c) it is democratic in spirit and in operation; and (d) it should be an intrinsic rather than an extrinsic part of the educational program.

Some guiding principles for financial reporting may be drawn from Farley's study (314) of what to tell the people about the public schools. In point of interest, news about business management and finance was ranked no higher than tenth among thirteen topics of school news by 5,067 patrons in thirteen cities. In every city of the study except one a negative correlation was found between the interests of school patrons in school news and the amount of space allotted to the several topics in the press. Alexander (305) pointed out that this low interest in school finance would probably not hold now. Farley (314) concluded that "the first step toward the improvement of publicity is its quality, not the increase of its quantity nor the number of media through which it passes. The most important element in the quality of publicity is its content." Farley (313) would make the superintendent responsible for all phases of publicity.

Moehlman (328), in his recent book, *Social Interpretation*, placed a new emphasis upon the "partnership concept of American public education," whereby the schools are viewed as a social institution to serve the people's needs, and, accordingly, must recognize the people's interests and wishes as basic. In so doing, however, the school personnel must also

recognize their fundamental obligation to keep the people thoroughly informed, or "educated," concerning what the schools are actually doing, and why.

Criteria and Standards

Criteria for evaluating superintendents' reports were developed by Clark (308). These required: that the report be endorsed by the board of education; that it include all data pertinent to the problems set forth and consistent with the established purpose; that it promote the growth and development of the pupil; that it be timely in presentation; and that it be planned, organized, and presented in a way adapted to the abilities and attitudes of the audience.

Criteria for a program of interpretation proposed by the Fifteenth Yearbook (330) were: "(1) *Is it interesting?* If educational interpretation is to reach most individuals, then it must compete with dozens of private and public agencies in capturing attention. Without attention the message is lost (2) *Is it understandable?* . . . A tendency of educators is to attempt to convey their message through the use of pedagogical terms (3) *Is it repeated frequently?* A school publicity story worth telling . . . is worth repeating. In fact, there is psychological evidence that it must be told again and again (4) *Is it satisfying?* . . . More than merely being accurate and reliable, the program of educational interpretation should be satisfying to the public (5) *Does it reach everyone in the community?*"

One of the requirements on the score-card developed by Engelhardt and Engelhardt (312) is that there be audits and financial statements at appropriate intervals. With reference to audits there must be: (a) an annual audit covering all accounts including the internal accounts by a disinterested professional certified public accountant; (b) or a state audit at a time not known in advance to local school authorities, by a member of the state department of education; and (c) publicity in school reports and local papers for all audits. The score-card further calls for monthly and annual reports of current receipts and expenditures on forms that follow the ledger distribution, showing budgetary balances for each account with essential supporting data; periodic and annual statements showing complete data regarding bonds and loans, the interest thereon, and sinking funds; and periodic and annual statements of all trust and special funds reported separately (312).

A committee of the National Association of Public School Business Officials (329) stated that the schoolboard and the public expect the accounting officer to have available: (a) a summary of the payments for each major function and the percent each is of the total; (b) a summary by each school of payments distributed to instructional activities—directly where possible and prorated where necessary; (c) a rank tabulation of schools to show maximum, median, and minimum costs for "current

expenses," using weighted average daily attendance and 1,000 pupil-hours as factors; (d) a plan for distributing all "current expense" payments within a school to grades and subject-taught groups for those who may wish to do so.

Giving Assurance of Proper Stewardship

Certain aspects of a study of the safeguarding of school funds by Linn (319) are pertinent for purposes of financial reporting. Among measures in a broad program for the protection of funds he listed audits, financial statements, reports, and publicity. He pointed out that an audit tends to develop greater confidence in the school administration. He observed that a system of financial statements and reports not only aids in checking up on the stewardship of officers responsible for the care and management of funds, but makes it possible to locate errors or expose wrongdoing. It also provides information for use in the development of unit costs and their computation, and makes possible the carrying out of the educational program with less waste. When it creates the impression that funds are being closely guarded, it has a wholesome moral effect.

The Finance Division of the New York State Education Department (338), as one step for the protection of district funds, recommended publicity of the treasurer's accounts, and a system of financial reports both by the treasurer and the accounting officer. At the close of the fiscal year the board of education should provide for the audit of the treasurer's records in order to determine that they have been accurately kept, and that all district funds have been completely accounted for.

Uses of Unit Cost Figures

"Unit costs should be used for establishing efficiency and economy in administration. . . . Briefly . . . the value of unit costs lies in the following points: (a) they furnish a scientific basis for compiling the budget; (b) they point out to the executive the place of attack when the objective is to reduce expense, or when unjustifiable variations between departments or buildings seem to exist; (c) they reveal strength or weakness in a school system by indicating whether the more essentials or the less essentials are emphasized; (d) unit costs by functions, departments, and objects, are an index for evaluating school service, and protecting the taxpayer against the encroachment of abnormal tendencies; and (e) unit costs, in general, aid to set up standards of correct practice, to formulate an index for efficient and economical management, and to give the executive, the schoolboard, and the public a ready answer to the ever increasing inquiries regarding public school expenditures" (329). However, "unless the executive actually makes use of unit costs the expense of securing minute data and compiling elaborate tables of information cannot be justified" (329).

Various studies calling attention to the need for accurate cost data, as a basis for financial reporting, were reviewed in the *Review of Educational*

Research for April 1935 (343). Variable factors involved in school cost comparisons were pointed out by a committee of the Michigan Education Association (323). The practice of appraising school systems on the basis of raw costs was deemed "unsound in principle and unfair in practice," for it assumes "equal valuation, equal needs, equal efficiency, equal personnel, equal service, and equal products." Forty-nine possible variables entering into cost comparisons were listed, including such as: size of the district, the distribution of children by ages, the percent of pupils in public and non-public schools, the index of purchasing power, the ratio of assessed to true valuation, per capita wealth, building operating and maintenance policies, the educational service rendered, the quality of the educational product, etc.

Standard Units

The National Association of Public School Business Officials (329), quoted above, attempted to carry the determination of unit costs a step beyond the common practice of computing such costs solely on a basis of average daily attendance. *Gross average daily attendance* cost was supplemented by *weighted average daily attendance* cost and 1,000 *pupil-hour* cost in each main classification and function of expenditure. The aim was to make possible the computation of per-pupil hour costs for grades and subjects, taking into account both attendance and the time element. It was claimed for the *pupil-hour* (one clock-hour) factor that it "smooths out all of the time variables incidental to varying numbers of school days, the varying lengths of daily sessions in different instructional activities, and finally the time variables within the same activity due to part-time, double-session, etc." Applying the method to actual figures for a large city showed that a "raw" aggregate daily attendance figure of 1,113,105 attendance units became 1,065,941 units when adjusted to standard daily sessions of five hours, and 1,038,140 attendance units when further adjusted to 191 actual sessions for the calendar year.

Moe and his staff (326) developed a "Standard Enrollment Unit" for use in obtaining comparative costs for each part of the curriculum. This unit represented one pupil enrolled in one school subject for five standard 45-minute class periods per week for 180 days. Advantages claimed over more commonly used measures are that it includes the two elements of pupil-load and instructional time and can be used for the allocation of school costs in particular programs.

Appraising of Reporting Practices

There is a paucity of research information as to the relative effectiveness of various financial reporting practices. Efforts at appraisal of either general or financial reporting for schools have usually been limited to comparisons and contrasts with successful commercial advertising or news dissemination practices. Peterson (339, 340) reported almost complete failure of public

budget hearings as a means of attracting public attention. Spinning and Akerly (346) reported that the Rochester practice of distributing its attractively illustrated budget served to develop an informed public opinion and to check expenditures.

The relative merits of well-planned continuous publicity programs and intensive campaigns for funds have been discussed (313, 327). Intensive publicity campaigns as a means of focusing public attention upon the financial needs of the school program have received both praise and condemnation at the hands of students of public relations (306, 313, 327). While granting that some measure of appraisal is afforded by their frequent success, some students hold that campaigns are likely to be followed by undesirable repercussions. Moehlman (327), before the depression, pointed out that such campaigns, when intelligently conducted, seldom failed in their objectives, but regarded a continuous public relations program as more effective in winning sustained public support. "The average citizen is apt to develop a more sustaining and intelligent interest in the schools when he has them constantly under consideration. The continuous stream of easily comprehended information that develops as a result of a constant effort to inform, bears fruit that increases in quality and in quantity over a period of years." Some have held that the need for campaigns which are designed to cope with emergencies would seldom arise were a continuous program of publicity in effect (313, 327).

Lasswell, Casey, and Smith (318) listed the research studies of the effects of commercial advertising. Particularly suggestive for educators are those which report efforts made to measure such matters as the attention, interest, and memory, value of given materials, the value of color, and the value of white space.

Some suggestions for possible procedure in evaluating the effectiveness of financial reports may be gained from Sims's study (344). Using two groups equally favorable in attitude at the outset, and employing Thurstone's technic of "equal-appearing intervals" he measured the effect of having one group read a convincing piece of propaganda for the TVA, and the other group read three selections against the TVA. The effect of the propaganda for the TVA was to make the group even more favorable, while that of "the Power propaganda" had the opposite effect. The changes in both cases were statistically significant, being not less than five times the probable error. Exposure of persons to *both* types of material made no noticeable change. Not all persons, however, in either group were influenced in the same direction. In a check made three months later the changes were found to have a considerable degree of permanency.

Illustrations of Reporting Possibilities

The possibilities of both general school and financial reporting are to be observed among scattered reports currently issued by superintendents and boards of education. Illustrations of attractive, well-illustrated annual

reports are given in the Fifteenth Yearbook of the Department of Superintendence of the National Education Association (330). It was observed: " ' Unless a report is read, it is a waste of time and money to issue it. ' Long tables of attendance and financial facts do not appeal to the average reader, altho charts and graphs conveying the same information may be made most attractive. Photographs of school activities can be made to 'tell a story' and to appeal to the esthetic sense of proportion, placement, and lighting. Examples of an attractive use of illustrations and charts are to be found in the reports of superintendents of schools in the following cities—Mount Vernon, New York (1932); Camden, New Jersey (1934); Fostoria, Ohio (1933-34); Minneapolis, Minnesota (1935); and New York, New York (1935). These are but a few from the many which might be cited but the total number of annual reports which conform to principles of art and advertising is remarkably small."

Among other illustrations of outstanding efforts at reporting cited in the yearbook were: (a) the magazine *School and Home* published under authority of the St. Louis Board of Education; (b) the illustrated weekly bulletin of the Maplewood, Missouri, schools (1935); (c) the Auburn, Indiana, plan by which students are given an opportunity to become informed about public finance; (d) illustrated leaflets of Oakland, California, giving unit cost figures accompanied by simple comparative statements; and (e) *Your Schools*, a survey report of the schools, Evansville, Indiana.

Campbell and his staff (336, 337) in New York City late in 1935 and again early in 1937 issued reports, entitled *All the Children*, similar in format to that of the *Fortune Magazine*. In transmitting the first of these, Campbell wrote: "With a view toward making the report more attractive and more readable, and of greater interest to parents, we have used an entirely different format and included scores of photographs, charts, and easily understandable tables. Instead of trying to cover every activity in detail, we have selected for discussion in the main volume of the report some of the vital problems facing the school system: individuation of instruction; truancy, delinquency, and crime prevention; the building shortage; and other problems.

"One of our most important functions is to keep the public informed of what we are doing and it is hoped that this report with its illustrative material will help begin in the performance of this function."

Kersey and his staff at Los Angeles (322) issued a profusely illustrated 11 x 14 inch report of 160 pages, entitled *Your Children and Their Schools*. The report contained some 200 highly artistic and informative halftone illustrations and a number of charts and graphs. Financial aspects of the school problem were reported in six pages of striking illustrations and terse statements. Included in these were an 8½ x 11 inch photograph of a statement in a reader's hands showing the cost of educating a child for one day, a page each to two pie graphs showing the sources of the school dollar and its disposition, and three pages of tabular matter in large type and well leaded.

Kersey, aided by Howell (320), also issued a 3½ x 6 inch pamphlet of 27 pages of important financial facts concerning the Los Angeles schools. Comparative tables and graphs of significant financial facts and budget summaries supplemented by brief interpretative statements were shown. The report was designed "to meet the needs of laymen and those of the profession who are desirous of obtaining figures on school costs and other statistical information in a brief and concise form."

A third publication of the Los Angeles schools, *Tentative Budget 1937-1938* (321), was issued in the form of an attractively illustrated booklet of 20 pages in 8½ x 11 inch size. Among its features were a full page chart of the child's bill for one day of schooling, and halftone illustrations and statements under the caption "A Glimpse of What 62¢ a Day Will Buy for the Children of Los Angeles," followed by graphs and tabular statements bearing upon the major functional divisions of the budget.

A similar form of budget report has been published and circulated in quantities sufficient to reach 10 to 20 percent of the population by the Rochester Board of Education (304, 342) for a number of years. Photographic samplings of the educational program and accompanying statements set in 12-point type, white-on-black letter charts, tabular statements, and graphs of the significant facts are among the features of this report.

Potter at Milwaukee (325) issued an illustrated report on financing the schools in catechetical format for the purpose, as he stated, "to present the more important and pertinent facts concerning our school finances as clearly and concisely as possible in order that the citizens of Milwaukee may judge for themselves, for they are our judges and their final decisions will govern our administration." Among typical questions printed in bold face type and answered were: In what ways have the burdens of the schools been increased during the present economic depression? How has the increase in the proportion of the population attending school in the senior high-school grades affected school expenditures? What bearing on the division of the local tax revenues for various local governmental purposes has the fact that the schools now enrol a larger proportion of the total population?

Unusual efforts at financial reporting cited by De Young (310) were: the practice of several New York cities in printing the budget on the back of tax receipts; brief, pointed pamphlets issued by the Baltimore, Maryland, the Grosse Pointe, Michigan, the Rockford, Illinois, and the Shorewood, Wisconsin, schools; the issue of 150,000 copies of the *Detroit Educational News* for January 31, 1935, captioned, "Dollars and Sense of Education"; and the printing in the *Pontiac Press* of the Pontiac, Michigan, school budget and accompanying explanatory matter.

Among other noteworthy contributions to the field of financial reporting have been the several numbers of the *Research Bulletin* of the National Education Association (331, 332, 333). The bulletins provide a storehouse of ready information, carefully interpreted, bearing upon problems of local, state, and national school finance.

CHAPTER VIII

Salary Scheduling¹

J. HAROLD GOLDTHORPE

THIS SUBJECT was treated in the June 1937 number of the *Review of Educational Research* on Teacher Personnel. Since that time there have appeared only a small number of studies of a research character, but there have been a larger number of general articles. There are included here also a number of studies in the field of general government service.

Educational Salaries

Elsbree presented a number of papers concerned with various aspects of the salary schedule problem (355, 356), as well as reports of field studies for two cities in metropolitan areas (352, 353). He discussed the recent major changes in scheduling practices concerning the arrangement, number, and size of increments, the four general procedures in developing new salary schedules, the question of family allowances for married teachers with dependents, and called attention to the relationship of revised schedules to a modernized system of state aid and the tax revenue structure.

Detailed and comprehensive studies of the salaries of school employees of the boards of education of New Rochelle, New York (353), and Greenwich, Connecticut (352), have been completed. The New Rochelle study was prompted by a survey made at the request of the local board by the New York State Education Department which analyzed the basic problem giving incidence to the Elsbree salary study (364). These surveys utilized the questionnaire approach, in analyzing the cost of living of teachers, comparative salaries paid by neighboring communities, and the community's ability to carry the proposed schedules. Elsbree (353) recommended new schedules of the single-preparation type, with three and four training levels, and with twelve to twenty annual steps with increments of \$50 to \$150. He also considered the general principles of schedule-making, the cost of proposed schedules, and the transfer of the present teaching staff to the new schedules.

The trend of New York State teachers' salaries during the depression is presented in a study of the New York State Teachers Association (365). Public school salaries for the year 1935-36 are presented separately for the New York City metropolitan area, six upstate metropolitan areas, other upstate cities and villages, and for the schools in the supervisory districts. The influence of the relatively high salary scales in the New York City area is indicated by the 1935-36 median salary of \$3,226 as compared with the median salary of \$1,647 for the balance of the state.

¹ Bibliography for this chapter begins on page 204.

Government Salaries

A treatment of salary schedule policies in the government services was presented by Mosher and Kingsley (363). This book summarized the field of government personnel, and presented material on prevailing practices in public service wage policies, and on criteria for salary scales which will attract and retain satisfactory personnel without undue tax burdens. The treatise also dealt with the trend of public wages, factors in the determination of general wage levels, maintenance allowances, wage differentials, and the installation of new schedules.

Another general discussion of the principles and practices of public salary scheduling was presented by Wilmerding (372) of the Commission of Inquiry on Public Personnel. He reviewed the arguments in favor of the two general wage standards, "the ethical wage" and "the going wage." He was opposed to family allowances, but recommended a cost-of-living bonus, and proposed a plan of salaries for the federal service in three divisions—clerical, executive, and administrative—ranging from \$760 to \$20,000.

Salary schedules in the federal service—The most comprehensive and detailed studies of the personnel problem of the federal government are contained in the reports of the Personnel Classification Board (357, 369, 370). These studies were based on 104,000 federal, non-postal, employees. Several chapters are especially concerned with the factors of wage determination and the recommended salary schedules. These reports analyzed the basic principles and factors concerned with schedule construction, presented a comparison of salary schedules for the various services, and recommended rates for three additional services. The effect of salary differentials was analyzed, but because of administrative difficulties, a recommendation was made against the installation of a system of differentials.

In comparing salaries for corresponding positions for non-governmental services, the reports pointed out that the salary rates in federal positions paying below \$2,000 were better than those in non-governmental services, but that in the professional and scientific services, industry and business pay more. Salaries paid to major executives by private concerns were shown in general to be from 100 to 500 percent higher than those paid by the federal government. In general the civil service requirements for federal services are more exacting than entrance requirements of non-governmental services. On the basis of findings, the Board recommended the introduction of new salary scales with semiautomatic increments, and the addition of three new services.

The study by Feldman (357) is an analysis and appraisal of the Personnel Classification Board's work. Part 1 is concerned with the problems of salary policy, and Part 2 with the problems of personnel selection, promotion, organization, and group representation. In the first part Feldman considered the basic economic principles underlying salary scales, the use of the cost of living standard, family allowances, the application of mini-

mum wages, geographical differentials, relationship to the price level, use of the merit system, and promotion standards.

The Tennessee Valley Authority (368) prepared its salary schedule largely upon the pattern of the federal classified service. This schedule has twenty salary gradations for six services, with entrance rates varying from \$840 to \$9,500, and with the increments ranging from \$150 to \$500. The Authority also published a statement of its criteria for satisfactory service and the duties of its review board, together with the details of its appeal procedure.

The most recent treatment of federal salary schedules is contained in a report of the President's Committee on Administrative Management (366, 367). These reports reiterated the major recommendations of the Personnel Classification Board and the Commission of Inquiry of Public Service Personnel, relative to higher salaries for heads, undersecretaries, and assistant secretaries of the executive departments, and for the highest grades of career and classified services. The Committee urged further extension of the work of the Classification Board to include additional departmental positions and certain positions in governmental corporations and temporary agencies.

State and local salary policies—There is a wealth of material on salary standardization and classification of positions in the bibliography by Greer (359). The League of Virginia Municipalities (361) presented a comparative study on the cost of living, housing, and family status of 3,280 municipal employees of that state for the year 1931-32. It compared minimum health and decency budgets for the major items of the household budget: food, clothing, housing, fuel and light, sundries, and total family expenditures, for several employee groups. It was the conclusion of this report that over half of these employees received compensations less than the amounts of the minimum health and decency budgets.

An effort to adjust salaries to changes in the price level was reported by Herbert (360). He reported ten years of experience of the city of St. Paul, in adjusting annually the salaries of civil service employees in accordance with the cost of living changes as indicated by the use of Bureau of Labor Statistics index figures. During this period there were two upward adjustments, totaling three points, and four downward adjustments, with a total of sixteen points. His conclusions in support of this unique experiment were: that it maintained a constant purchasing power of the employees; that it survived the "acid test of substantial downward revisions"; that it eliminated the periodic bickering associated with salary revision efforts; and that it was fair to all parties.

An attempt to deal with the problem of salary schedules of state employees was made by New York State in the passage, June 1937, of the so-called "Feld-Hamilton Career Act." The Act itself established classes of services and salary grades for the entire state classified service excepting positions in the exempt and labor classifications. This law also provided for

a temporary salary standardization board to place all pertinent state positions into the proper grades and classes set up in the Act.

Eleven major services were established with annual minimum and maximum salaries between \$700 and \$11,000 plus. This schedule provides for five or six annual increments of from \$100 to \$400, for three to eight grades, within each service. The law also mandates the classification of all new positions in accordance with the provisions of the Act. At this writing the temporary salary standardization board has finished its work and the current executive budget provides for the detailed application of the Act and the board's allocations in terms of recommended appropriations. It is estimated that over 90 percent of the state employees embraced within the provisions of the Act will receive increments during the first year of its application. This Act, the report of the salary standardization board (not yet published), and the executive budget for 1938-39 are well worth careful study by all those contemplating research in this area.

CHAPTER IX

Insurance, Purchasing, and Stores Management¹

JOHN GUY FOWLKES

Insurance

STUDIES dealing with school insurance problems during the period 1935-37 are not numerous, but for those which have appeared the central theme seems to be that any school insurance program ought to be organized on a businesslike plan. A complete appraisal of school property is stressed more than any other factor. The excellent description of the school insurance program of Norfolk, Nebraska, by Burkhardt (377) should indicate to other school districts what can be done in this matter. He reported a reduction of 70 percent in insurance costs during a five-year period. The initial approach to the reduction was a complete appraisal of buildings and equipment. Burkhardt listed six factors which made possible such marked savings: (a) reducing the amount of insurance on many old buildings; (b) changing the classification of much of the equipment to buildings; (c) making rate adjustments by remedying certain little defects; (d) purchasing the insurance on a five-year basis at the cost of four years, with a one-fifth premium due each year; (e) being alert to take advantage of general rate reductions; and (f) using 80 percent coinsurance.

It was also shown how Montclair, New Jersey, has improved its school insurance program by putting it on a businesslike plan, starting with "an annual appraisal based on current values" (393). Other changes were achieved by writing five-year insurance with one-fifth of the total insurance expiring annually, and after an examination in order to comply fully with the rules and regulations of the Schedule Rating Office. The result of such changes reduced the annual average from .247 to .116. Besides the financial saving effected, an appraisal is of no little importance in leaving with the board a complete survey of school property including insurance rates for each building.

Baldwin (373) also stressed the importance of an appraisal of the school property. His explanation of the terms "provable appraisal," "value of a building," and "coinsurance," were very clear. He stressed the need of provable appraisals particularly with coinsurance, in that as values fluctuate the insurance must change or the value of the insurance for protection purposes will suffer. Additional arguments given for having an appraisal are that the cost of one is usually less than one half of 1 percent of the cost of a new building and it is only necessary once.

Another report made by a schoolboard told how study of the insurance problem meant returns in the form of reduced costs, greater safety for

¹ Bibliography for this chapter begins on page 205.

children and teachers, and assurance of a fully protected school plant (392).

Jenkins (383) supplied valuable information telling how expenditures for insurance can be reduced. This study advised against the dangers of overinsurance and emphasized again that maximum coverage should be based on careful appraisal. A list of factors causing increased insurance rates is given which is of importance in analyzing one's insurance plan. Of interest also is Jenkins' advice on the type of policy carried. He recommended the use of a single-schedule policy because of (a) the tendency of such a policy to eliminate many errors and expirations, (b) the convenience of dealing with one agent and one company, and (c) the fact that a single policy gives inspections, and usually better rates.

Joyner (384) wrote on the distribution of school insurance to local agencies. His study advised how to gather data regarding agencies and in this respect advocated the use of an insurance questionnaire. Joyner also listed bases for the selection of eligible agencies and how to determine the amount of insurance that should be given an agency. Caddey (378) described the present insurance plan of Tacoma, telling of appraisal value, the average rate over a five-year period, and the selection of insurance companies.

Werner (396, 397) dealt with the problem of state insurance for schools. He pointed to South Carolina, Wisconsin, and North Dakota as having successful state insurance for schools, while sixteen states require that school property be insured. He advocated that school insurance be mandatory for all, with the state, and with a state fund similar to that of Wisconsin.

Purchasing, and Stores Management

The two administrative problems of purchasing and stores management are closely related, and as no studies were reviewed which dealt solely with stores management, these two topics are being reviewed together. There are two excellent studies of the methods employed in large cities for the purchasing and the handling of supplies. One, by Reagle (390), described the organization at Montclair, New Jersey, where the superintendent begins in November to get information on the budget requests for the next year, and the purchase of supplies is completed the following May, by authorization of the board after bids on materials have been received. The author listed five advantages of the procedure followed at Montclair: (a) the education staff is responsible; (b) there is equal division of money for all children; (c) the control is financial, not an item control; (d) the principal of a school settles the division of money in his building; and (e) every school and department has to stay within its budget limits.

The second study was by Councell (380) and described the method of handling the purchasing and supplies in East Cleveland. A large central warehouse is used not only for supplies but for the maintenance depart-

ment—tool room, garage, and general storage space. In this system requisitions for supplies come to the superintendent in May, the store clerk completes his inventory in June, and new materials needed are secured by the use of competitive bids. An interesting feature of the accounting system is the visible card file, located in the warehouse, in which each item has one card for receipt and one for disbursement, giving the stock on hand at all times.

Young (398) told of a plan of cooperative buying carried out in a section of Colorado where all districts of a certain valley advertise for bids, and order, jointly. There are large savings through buying in quantity—often in carload lots. Several districts estimated savings of 30 percent of the cost. It is questionable whether this method can be applied generally.

Cheney (379) described four points to keep in mind in buying equipment for a new building. Belding (375) argued for greater expenditures for texts, pointing out that a saving in books is a "misplaced economy" as only 2 percent of the average school budget goes for this purpose. Also he pointed out that even an increase of only 1 percent would yield big returns in better classroom morale and greater effectiveness in teaching. Rogers (391) described how the Chicago schools administer the budgeting, purchase, and repair of textbooks.

Brown and Byall (376) stressed rigid specifications in purchasing, so that substitution of inferior supplies is impossible. The authors gave four methods of buying supplies and equipment and gave a summary list of specifications for general supplies. They also believed that further study should be made of the problem of testing comparative qualities of the various articles to be purchased. This question of testing materials to be purchased was studied by Behrens (374) in the Berkeley High School. Here the school had laboratory facilities to make the necessary tests, so it was possible to have valuable cooperation between the purchasing department and the high-school laboratory.

Linn's report (385) was a severe criticism of high pressure salesmen, with flowery adjectives, who sell janitors' supplies at inflated prices. He revealed the secrets behind ordinary supplies, and gave useful home formulas for the same articles that would mean savings of several hundred percent. This study should make those in charge of purchasing supplies conscious of the need for careful consideration. Marshall (388) also presented views on the influence exerted by salesmen on the purchase of janitorial supplies. This study supplied standards for the selection of janitorial supplies.

A list of thirty-six principles adopted by the Committee on Supply Research, National Association of Public School Business Officials, although adopted several years ago, is reprinted because of its importance (394).

Hibbert (381) believed that educational aims should influence the selection of equipment and supplies, and dealt with (a) the responsibility for selection, (b) the criteria for selection, (c) the determination of which re-

quests should be approved, and (d) the determination of the proper firm from whom purchases should be made.

The basis for school purchasing in smaller school districts is described by McClinton (386), covering policy, specifications, and bidding. Nancarrow (389) listed standards for the purchase and selection of school jewelry.

According to Tolmie (395) a saving of from 10 to 30 percent in fuel costs was made through the use of stokers in the Rockford schools. Savings in labor costs, and more healthful room conditions, resulting from the installation of stokers are also discussed. The city of Ottawa employs the contract method in all coal purchases, specifying quality, price, and results (382). Of interest are the rights reserved by the board of education in its acceptance of fuel deliveries and of the standards that must be fulfilled. McCullough (387) dealt with the purchase of coal for small communities. In general this article closely parallels the Ottawa method of fuel purchasing.

CHAPTER X

The Support of Education: Federal, State, and Local Funding¹

JOHN GUY FOWLKES AND W. W. THEISEN
WITH THE ASSISTANCE OF
HAROLD BRANDENHOFF AND RUEBEN P. HEUER

CERTAIN ASPECTS OF THE PROBLEM of school support were treated in Chapters I, II, and III of this issue. The treatment here will follow the problem into greater detail.

Outstanding in the finance literature of 1935, 1936, and 1937 is an increased interest in formulating and executing a more adequate and equitable plan of financial support of public education (405, 408, 410, 412, 415, 420, 429, 437, 445, 452, 453, 461, 473). Research in this area recently has progressed generally in two directions: (a) toward the study of increased federal appropriations—the significance such funds may have on educational processes, and proper bases for the allocation and distribution of any such monies; and (b) toward increasing and improving individual state support, and the better distribution of state funds.

More and more during recent years local communities suffering from financial distress have turned to their respective states for help. Individual states, and particularly those states in which economic conditions would not allow necessary help to distressed localities, have in turn looked to the federal government for financial assistance necessary to meet the situation (408, 412, 415, 420, 425, 431, 444, 445, 446, 447, 452, 461, 463, 478).

The recent marked attention given to the possibilities of further federal support of public education has probably come about in part because of the financial underwriting by the national government of many essential services which local and state units of government have largely been unable to assume (401, 421, 438, 455).

History of Federal Support

Several studies have appeared dealing with the history of federal support. Givens' study (429) is probably the most complete and up to date in giving a history of federal grants up to the Civil War and the numerous grants since that time. His explanation of growing federal support is on the basis of population mobility, unequal ratio of children to wealth, and the inability of the states to meet the cost of public education. The history of federal support is traced by Mort (445) beginning with the Ordinance of 1787 in order to establish the setting for his plan of federal support.

¹ Bibliography for this chapter begins on page 206.

Hamlin's study (431) is valuable so far as it gives some basic principles governing a program for future utilization of federal funds. Mort (444, 445) has traced all forms of federal support.

Both McPherson (442) and Edwards (424) have traced the history of federal support from the Constitution down to the present, with attention directed mainly to the question of federal control. They arrive at different conclusions regarding theories of control.

Establishing the Principle of Federal Support

Federal support of public education has been increased during 1935, 1936, and 1937 through the Civil Works Administration, the Public Works Administration, the National Youth Administration (401), and by recent grants to vocational education (424, 428, 430, 431, 460). In addition to pointing out differences in the ability of states to support an educational program, Mort (444, 445) presented basic arguments for federal participation in the financial support of education. Two fundamental principles underlying any federal program are offered: (a) the equalization principle; and (b) the efficiency principle. The author pointed out that in order to place his plan into practical application, it would be necessary to determine objective measures of educational need and of financial ability among the states.

Cyr, Burke, and Mort (420) presented the problem of school support in a form which can be readily understood and assimilated by the layman as well as the professional worker. It attempted to give facts and principles related to the following questions: (a) What are the problems of paying for our educational program? (b) Why should we invest money in our public schools? (c) How can we revise our present educational system in order to provide equality for both opportunity and the burden of support? (d) Can local initiative be preserved if state and federal funds are supplied? (e) What can be done to correct our present school finance systems? (f) Where is financial support coming from?

Most of the studies dealing with the question of federal support for education have been of a given pattern, showing how economic conditions have caused presentday gross inequalities in supporting what is sometimes described as a necessity program of education (406, 409, 411, 412, 413, 414, 418, 422, 425, 426, 430, 432, 444, 445, 452).

Among such studies, Lundeen (440) pointed out how a combination of increased enrolments, decreased revenues, cuts in salary, poor and inadequate housing conditions, huge school district debts, increased teacher loads, and curriculum eliminations have created problems in the schools that the states themselves are unable to remedy because of their financial condition. Even though such a status of affairs was precipitated by unstable economic conditions, Lundeen indicated that the problems were in existence previous to the "depression era" and thus he argued there must be developed a sound program of permanent federal support which will assure at least a minimum educational opportunity for all.

Givens (429) and Eells (425) suggested that the great mobility of our population of today is another sound reason for further federal financial support of education. Eells stated that California, although ranking high in the ability to finance public education, is in favor of federal support because 43 percent of the population of the state have been born, and were probably educated, in other states.

Federal Support and Federal Control

With the advancement of reasons and programs for federal support there has appeared considerable conjecture regarding federal control of our educational system. Educational control has been strongly vested in individual localities. To a very great extent, local units have been opposed to financial subsidies, largely because the opinion has been that if funds are supplied by larger units of government, control of educational programs and policies would, to a considerable degree, pass into the hands of those who control the purse strings. This principle has probably served to keep in abeyance any pronounced swing of public opinion to federal support until economic conditions have forced such a concept.

Much has been written regarding this issue. The consensus seems to be in favor of no federal control; yet it is an issue far from being settled either as to detail or principle. Judd, Coffman, and Mort (435) presented three separate views on this question. Judd, while not directly favoring strict federal control, implied a strong measure of such control in suggesting a federal commission that would have power to allocate federal funds for equalization. Coffman criticized federal control as it has increased with the years and cites the NYA grants, and others, to support his contention that federal control is unfavorable to proper equalization of funds according to the principle of need. He stressed the suggestions of the National Advisory Council in Education of 1931. Mort would have the whole question of federal support determined objectively on a mathematical basis. According to his theory no federal control would be allowed. The only control suggested by Mort would be through a report made to Congress and the nation, of the use that had been made of any federal funds. Mort (444) pointed out that among the dangers of federal support, is federal control, and that funds must be distributed on a mathematical basis, we must feed local initiative, and there must be no compliance provisions. Chambers (408) argued for federal support but believed that federal control is unnecessary. He brought out the point that the \$300,000,000 proposed by the Harrison-Fletcher Bill has no controls attached except for two general requirements: (a) there be at least 160 days of school; and (b) as much money be spent by the state and local units each year as was expended in 1934.

Givens (429) termed the cry of federal control just a "flimsy excuse." This author traced historically federal support down to the Harrison-Fletcher Bill, and attempted to show that such financial participation has not offended the issue of federal control to any marked degree. Hamlin

(431) advocated some federal control to accompany any substantial program of federal support. His program for future use of federal funds recommended a limited control of funds and then proposed to let the individual states determine their specific educational programs. He justified a measure of control on the basis of reducing waste and misuse of funds. Bolton (405) showed that federal control must be avoided but his recommendations lead one to believe that federal control would be strengthened if carried out. Bolton suggested a five or seven member committee appointed by the President to administer federal support. Richmond (465) and Lundeen (440), while not primarily dealing with the central issue of federal support, expressed themselves as opposed to federal control.

Thompson (473) argued, by implication at least, that in order to make certain that federal support is used where intended, the federal government will have to specify explicitly certain provisions. His study, which concerns itself primarily with the question of insuring that the Negro receives his share of support, is interesting in the face of the numerous ones against any degree of federal control. McPherson (442) opposed the principle of federal support because of the dangers of undesirable supervision and control, citing the Indian schools as an instance of the influence of politics. In studying the historical development of federal control Edwards (424) made the interesting conclusion, based on inequalities that exist between white and Negro education in the South, that equal educational opportunity is impossible where decentralized control exists.

The Ability, Effort, and Need of States

The Research Division of the National Education Association (446) presented data showing the disparity in the ability of states to support public education. This study utilized the more recent research on the subject. Among other findings the bulletin said that the poorer states are exerting more effort in proportion to their resources than the more wealthy states. Reasons are advanced for school support by the federal government.

A subsequent study by this agency (448) revealed that the federal government spends less for education than for any other governmental function. The total federal aid for education in the states, both regular and emergency, in 1933-34 comprised only about 1 percent of total federal expenditures for all purposes. The portion of national income spent for public schools and colleges in 1934 was found to represent 3.87 percent of the national income. The percent of income spent for all public education varied by states from 7.14 percent in South Dakota to 2.90 percent in Connecticut. Educational expenditures per \$100 of wealth varied from \$1.20 in California to 48 cents in South Dakota. Investment in public school property represented 3.13 percent of the national wealth, as compared with an investment of about 55 percent for all types of real estate and improvements.

A formula was proposed for the measurement of the efforts of the states to support education, based upon the relation of the expenditures of the

states for current expenses of education to the relative tax resources of the states. A formula was also proposed for the measurement of the adequacy of financial support, based upon expenditures for current costs of education per unit of educational need as determined from Mort's index. On the basis of Chism's data (413), it was found that some states put forth more than twice as much effort as others. On the basis of Newcomer's data (450), range in the effort among states was still wider. A wide range was also found among states in the relative adequacy of financial support. No significant relationship was found between effort and adequacy. A significant low negative relationship was found between effort and ability, with the exception of 1930 where on the basis of Newcomer's data there was a negative correlation of .77. A rather high positive relationship between ability and adequacy was found. It was discovered that many of the states, even if they put forth relatively great effort, could not provide a national defensive minimum program of financial support and that in some states practically all the tax resources would be needed for education.

Chism (413) sought "to measure the economic ability of the several states to raise tax revenue under a system of state and local taxation based on the Model Tax Plan of the Committee of the National Tax Association and to determine their relative ability to support education." Among the findings were: that the group of six states most able to support education have approximately four times the ability of the group of six least able states; that the relative ability of the states to support education appeared relatively permanent during the period 1922-32; that one state, Mississippi, would need to spend all of its revenues for education in order to finance a program of public elementary and secondary education at an average level of expenditures; that five others would need to spend from 70 to 90 percent; and that thirteen would need to spend more than any of the forty-eight states actually spent.

From the facts discovered it appeared that a considerable number of states could not "finance their schools at a level of expenditure equivalent to the average for the country as a whole, even though they adopt modern systems of taxes, levy these taxes at substantial rates, and allocate a proper portion of tax revenue to the support of schools." He concluded that "there is need for extensive study to discover what relationships exist between the differences in abilities of the states to support education and the differences in the adequacy of the financial support which has been, and which probably will be, provided for public education by the several states. The social implications resulting from further investigation of this question will probably be of great importance."

Newcomer (450) developed an index of the relative taxpaying ability of the different states based on 1930. She computed the yield of six selected taxes: business income, personal income, real estate, corporation organization, stock transfer and severance, in six selected states. Her findings and methods were drawn upon in the studies of Norton and Norton (452) and of Mort (445).

Ashby (446) studied the efforts of states to support education. For purposes of the study, effort was defined as the ratio of the amount expended by a state for current expenses for schools to its financial resources. On the whole, states with less than average ability, he found, put forth greater effort to support schools than those with more than average ability. Correlations between ability and effort were negative.

Norton and Norton (452) studied the relation of the ability and effort of the states to finance education, to the adequacy of the financial support provided. An index of economic resources based upon ten economic items suggested by the Newcomer investigation was developed. The resources of each state were reduced to a percent basis, counting as 100 the total for the United States as a whole for the ten weighted economic items. These included: (a) income reported for federal income tax, (b) farm cash income, (c) value of farm real estate, (d) factory wage-earners, (e) value added by manufacture, (f) motor vehicle registrations, (g) production of electric power, (h) bank resources, (i) petroleum and natural gas production, and (j) stock transfers. The figures thus obtained for each state were averaged with those developed by Chism (413), and those resulting from Newcomer's estimates of yields from business income, personal income, and real estate (450).

The relative ability of the various states to finance education was then determined by dividing the figure representing the composite index of ability for each state by the relative educational burden of each. Three separate measures of educational burden, children aged from five to seventeen years, average daily attendance, and units of educational need as determined from Ashby's data and the Mort technic, were employed.

In measuring the relative effort of the various states, effort was computed on the basis of the ratio of current expenditures for education to weighted economic resources and to revenue available as determined by Chism. To determine the adequacy of support the expenditures for current expense per unit of educational need were computed. The relative adequacy of educational support for each state was then calculated, the ability of the nation to support education being given a value of 1.00.

The authors concluded that wide differences in the level of financial support provided education in different states are almost wholly the outcome of wide differences in the ability to finance education. The disparities in financial support are not primarily due to the failure of some states to make proper effort to finance schools. States providing the least adequate support, as a group, are making greater effort than those providing the most adequate financial support. The gross inequalities in financial provision for the support of education grow out of fundamental differences in economic resources and any attempt to achieve greater equalization must take account of this fundamental fact.

This subject is continued under the following head.

The Mort Report on Federal Support

Mort (445) reported an investigation, based on a series of researches carried on under his direction, for the purpose of determining educational need and the relative ability of the states to support schools as these factors may bear upon the question of the advisability of providing federal aid for equalizing educational opportunity. Indexes of educational need and relative ability were developed. Pupil-teacher ratios were applied to attendance data in each state in accordance with the plan developed by the National Survey of School Finance for use within states. Corrections were made to make possible a fair comparison among states. The data available for thirty-one states were carefully rechecked to determine the total measure of need for the individual states. Adjustments were made for differences in school organization practices in order to offset such bias as that which results when large and small one-room rural schools are counted as equivalent. Corrections were made also for differences in transportation costs and in relative support for secondary and elementary schools. The total need of each state was then expressed in terms of the ratio of its actual total number of weighted elementary classroom units to the number of such units if all were in large urban areas with classes of optimum size and no transportation required. While not claiming complete validity for the resulting index the author found that it eliminates gross differences among states arising solely from differences in population and that it is applicable to small areas within states.

Since the use of such an index would require the determining of need in the individual districts in a state to obtain a state's total and would, therefore, be administratively cumbersome, a simplified, or predictive index was developed. This was done by correcting the index for sparsity of population in rural areas. Methods were developed by which corrections may be made for variations in cost of living among states. Mort regarded the resulting measure of need sufficiently reliable that national policy may be built upon it without the granting of discretionary powers to a national authority. He found the relationships of the basic elements employed in the measure of need sufficiently constant to be used for a long period of time.

Ability of the states to raise taxes under the best devisable tax system was used as a criterion of ability to support education. The yield of six selected taxes, estimated by Newcomer (450), was used as an index of taxing ability. These taxes included personal income, real estate, severance, business income, corporation organization, and stock transfer. The relative rank of each state, and the percent of the total of each tax which could be raised from each state, were computed. A formula was then developed for approximating the relative taxpaying ability of the states based upon ten measures of ability—percent of urban population; per capita value added by manufacture; farm cash income per farm inhabitant; per capita postal

receipts; per capita retail trade—net sales; per capita motor vehicle registrations; per capita values of incomes from \$5,000 to \$25,000; per capita value of incomes of \$25,000 and over; total population; and corporate organization tax.

Mort (445) also arrived at what he termed a defensible foundation program for the schools of the nation. The method followed was "to select, from the thirty states for which data were available, those communities which have the same ability to support schools as the average community in the country would have should the present defects in state tax systems be remedied. The experience of these communities is taken as an index of what could be established as a national foundation program if the financial houses of the states were put in order and if the federal government were to assume the responsibility for equalizing the burden of education among states." The cost of a foundation program in a state was found by multiplying the number of weighted elementary units by the cost per weighted pupil unit for communities of average wealth when the latter was corrected for cost of living. The corrected pupil unit cost was found to be \$60.

The relative merits of two plans for federal support were considered, the one a *large fund* or complete plan of federal support whereby the national government would bear the full cost of the foundation program, and the other a *small fund* plan in which the federal government would provide only sufficient support to enable all states to offer a foundation program equal to that provided by the wealthiest states. The federal government would contribute the difference between the cost of a foundation program and the amount which a state's own state and local taxes would provide when these taxes are levied in accordance with the state's real ability to tax itself per unit of educational need. The total of the difference in federal aid required under the two plans was found to be \$829,000,000. The large fund plan would involve a transfer of the tax collection function of many taxes to the federal government. Excess funds above the national equalization program, or \$829,000,000, would be returned to the states from which they were collected in proportion to the ability to pay. The author recommended that plans developed for immediate steps be made in terms of a fifty-fifty combination of the large and small fund plans. Support of a full foundation program of \$60 per elementary pupil unit is not recommended as an immediate step but as a goal to be attained in the course of a period of years. A modified plan beginning at \$15 per pupil unit is recommended as a beginning step, for the reasons that it considers the needs of the poorest states and at the same time makes possible a general forward movement in all the states considering differences in ability. It would tend to avoid the danger of giving more funds to poorer states than can profitably be used.

An editorial comment in the *Elementary School Journal* (461) expressed doubt as to whether Mort's plan goes far enough, saying that it does not provide sufficient support where the load is greatest and the financial ability is lowest.

Federal Support for School Buildings

Weller (477, 478) made two analyses of the relation of federal aid to school building. He showed that Delaware in 1927 financed all school building programs in the state. Other states, such as Arkansas, Minnesota, Ohio, Rhode Island, and Wisconsin, have granted limited aid for both urban and rural schools, whereas Alabama, Missouri, New York, Oklahoma, and South Carolina have helped only rural schools. Indicating how federal aid had come to the foreground in 1933 because of the lag in schoolhouse construction and the need of some form of unemployment relief, he pointed out the growing opinion which sees education as a matter of national concern. He argued against the present basis of federal aid for building construction and suggested that a sound federal finance plan would include an equalization principle with minimum school building standards and some means of encouraging local initiative. Weller's second study gave a description of the inadequacy of present buildings and reiterated the principles of federal participation.

Polakov (459) showed the expenditure that would be needed to bring buildings up to modern standards, or to "catch up" in schoolhouse construction. Expenditures for needed school building, he found, would total over five billion dollars. Mort (445) made no special provision for federal support in building programs, as his foundation program is for current expenses only; but he did suggest that it could be made to include capital outlay by increasing the amounts, and he favored support which would stimulate rural school consolidation. Henry (432) analyzed the federal building program under the Works Progress Administration.

Federal Support for Vocational Education

Recent studies showed that federal support for vocational education is now well established. Hamlin (431) discussed the rapid gains that have been made in vocational education in every state during the twenty years of federal support beginning with the Smith-Hughes Act of 1917. The effect of federal appropriations for vocational education on state initiative was discussed in an editorial in *School and Society* (426) which stated that the results have been wholesome. Although the states are only required to match federal appropriations for vocational education, on the average \$2.13 of state and local money was spent for every \$1.00 contributed by the federal government for vocational education in agriculture, trade and industry, and home economics.

The question of the states' matching funds contributed by the federal government is treated again in another editorial in *School and Society* (428) on the George-Deen Vocational Educational Law, which went into effect July 1, 1937. This new law, intended to take the place of the George-Ellzey Act, authorizes \$12,000,000 annually for vocational education but requires only that the states match with 50 percent at first, increasing 10

percent each year until they will have reached the dollar for dollar matching of funds in 1946. A third editorial in *School and Society* (460) presented President Roosevelt's ideas regarding the George-Deen Law. In this discussion are the President's reasons for disapproval of this bill.

Federal Support for Parochial Schools

Blakely (404) studied federal aid in relation to the support of parochial schools. He made a plea that the \$300,000,000 appropriation provided in the Harrison-Fletcher Bill be distributed for pupils regardless of race, creed, or the school attended. He expressed the belief that federal aid is permissible as long as it does not destroy state control. Mort (445), while not giving much space to the subject, suggested federal support to private and parochial schools if they are recognized by a state in the distribution of state monies to schools. An editorial in *School and Society* (462) treated the problem in New York from the standpoint of state support. Two arguments for such aid were given: (a) if religious schools were to close it would mean a big drain on the treasury to provide the needed education; and (b) that supporters of religious schools are now paying double for education.

Federal Support for Negro Education

Little research has been conducted on the problem of federal support of Negro education but Thompson (473) presented the pitfalls that well-intended legislation for federal support may contain. He pointed out that the Harrison-Fletcher Bill has loopholes that would allow southern states to fail to distribute money to the Negro and that the amendments necessary to take care of that problem are: (a) that states should be required to spend at least as much as in 1936, (b) that a printed report of disbursements of both state and federal support by race be submitted, and (c) that the word "systems" of schools be changed to "every" in the 160-day clauses.

How federal emergency aid in the form of NYA grants has benefited Negro youth by having a noticeable effect on decreasing the illiteracy of Negroes in general was shown in an editorial in the *Journal of Negro Education* (419). Mort's study (445) recommended a solution to the problem of Negro education in the South by making the foundation program for the Negro what the standard now is for the whites.

State Support for Education: Conditions and Trends

Many states have recently begun the process of smoothing out the patterns and foundations for the equalization of educational opportunity within their respective localities. Studies concerning state participation in school support have been made in many states during the last three years (403, 406, 409, 415, 418, 423, 427, 436, 437, 441, 451, 452, 453, 464, 467, 472, 476).

Chambers (410, 411) presented a picture of state legislation enacted during the year 1935 in the various states. He described the foundation

programs of state support in Ohio, Oklahoma, New Jersey, and Michigan. Other changes in special provisions for state support were noted in North Dakota, Montana, Utah, Nevada, Missouri, New Mexico, Ohio, New Jersey, Pennsylvania, Michigan, North Carolina, Texas, South Carolina, and others. In all of these instances the author pointed out that the plans of state support of public education have been improved during recent years. These two studies illustrate how state equalization programs are eventually being smoothed out in places where defects were noted and how state support is being extended.

Covert (418) showed that although state aid decreased during the period 1900-30, there has been marked increase in state support of public education since then. Now three-fourths of the states provide funds to make possible a minimum school program. Of these states, seventeen financed the program by general property taxes; ten, by income taxes; and three, by sales taxes, liquor taxes, tobacco taxes, etc. While Delaware alone in 1923-24 provided more than 50 percent of school revenues from state sources, three additional states—North Carolina, Texas, and West Virginia—did so in 1933-34. The median was found to be approximately 25 percent with extremes ranging from 93.1 percent in Delaware to 1.9 percent in Kansas. The range in local tax rates necessary for local districts to participate in equalization funds in 1933 varied from 6/10 of a mill in New York, for all but one-teacher schools, to 20 mills in Minnesota. Extreme variations in local school tax rates within a state occurred in North Carolina with a range from 21 to 86 mills.

The Research Division of the National Education Association (448) reported evidence of a trend away from local support of public schools toward a greater reliance upon state support. Local contributions were found to have declined from approximately 83 percent in 1920 and 1930 to 75 percent in 1934. Among the factors responsible were the decline in property tax revenues and inequalities in the ability of local units to support schools.

Trent (474) reported the gains in West Virginia which resulted from reorganization on a county-unit basis and distribution of state aid raised through a uniform tax rate on a pupil-teacher basis. Among these have been uniformity in tax rates throughout the state, consolidation of small schools, an improved educational program, increased high-school enrolment, reduction in the number of local districts from 398 to 55, reduction in administrative costs, supervision for rural teachers as well as for city teachers, reduction in the number of teachers, increased standards for teachers, lengthening of the school year to nine months for all the schools of the state, and restoration of salaries to the predepression level.

Akerly's study (399) pointed out that although states apparently are attempting to equalize educational opportunity they may actually be making conditions more unequal. Such may be the case in plans where the state or federal government offers to match certain expenditures by the

community. He pointed out that whereas wealthy districts could readily do this, the poor districts could spend very little. The author likewise pointed out how Mort's plan, as applied in New York State, has resulted in greater inequalities, particularly in regard to educational opportunity. It is interesting to note that he attributes this situation to the small local school district being the administrative unit. Burke (406) reached similar conclusions regarding the failure of minimum plans to equalize, stating that this is due to failure to recognize some extra costs such as transportation, capital outlay, legal services, and others. He would place aid for transportation on an objective basis under state control but would leave the curriculum to local control.

The effect of state aid programs on administration of the schools was studied by Viles (476) and McNeely (441), both authors showing that such aid results in changes. McNeely pointed out that a state may assume complete administrative control by designating minute subitems of use in appropriations, and may eventually impair the educational program.

Lancaster, in a book entitled *Government in Rural America* (437), described the government and administration of the rural county, township, and school district units in this country. Particularly interesting is the treatment in that part of the work dealing with state and local financial relations and with the inequalities in costs of public education in rural areas.

State Support for Education: Methods and Plans

Among typical plans for equalizing educational costs discovered by Covert (418), and reported also by Ludeman (439), were: (a) public education provided chiefly at state expense; (b) equalization above a low local tax levy, as in New York; (c) equalization above a medium tax levy, as in Maryland; (d) equalization of school costs above all other available funds, including a maximum local tax levy for schools; and (e) distribution of certain funds to guarantee teachers' salaries, as in Colorado. Ludeman listed special state aid for distressed districts as another general type. He maintained that the quality of equalization is determined by the bases upon which school funds are distributed. "These should take into account the district's ability in revenue raising, the general needs of the district in pupil units to be served, and the efforts of the district to run a good school."

An index of relative ability to support education, for use in distribution of state aid, was prepared by Cornell (416). It was found that proper weightings assigned to total population, retail sales, motor vehicle registrations, the value of farming, of manufacturing, and of mining production, the number of individual income tax returns, and postal receipts, would yield indexes of relative ability for New York counties which would agree with full property valuation better than would assessed valuation. A six-variable formula based on 51 New York counties was developed

which was found to be "unequivocally superior to assessed valuation alone in 1930." That is, if relative ability were to be determined by the formula for these counties, in 1930, the inequity would be, on the average, less than if assessed valuation had been the basis of determining relative ability. The ability index would have the added advantage over assessed valuation in that neither local nor central authorities would be able to manipulate data in such a way as to change the amounts of central funds to be paid by the state to governmental subdivisions in the support of education.

Pauly (457) reported changes made in financing of schools in Oklahoma. Distributions from a primary aid fund are based upon average daily attendance, density of population, and training of teachers. A secondary fund under the control of the state board of education is distributed on the basis of ability to pay to approximately the lower third of the schools. Other steps recommended are: (a) a minimum mill tax for all districts, (b) reorganization of districts to make them financially efficient, and (c) assessments on true value.

Overn's study (456) dealt primarily with state aid in regard to a school building program but he presented four points in a total state support program. He proposed a state policy of (a) taxation on ability to pay, (b) districts of local control large enough to include an "automobile community" and of sufficient population to furnish a twelve-grade school, (c) equalized distribution of all school income for current expenses, and (d) equalized support of the present debt and the cost of all new buildings throughout the state.

State Support for Building Programs

Hudnall (433) reported on a statewide program of school building in Delaware, where schools are constructed on a pay-as-you-go basis. Other features include: (a) limitation of bonds of local school districts to 2 percent of the 1919 assessments; (b) responsibility for paying off outstanding local bonds assumed by the state; (c) an educational program developed on the basis of school district needs; and (d) elimination of one- and two-room schools where practicable.

Moehlman (443) proposed that the state provide for all capital improvement and extension and that all credit to local districts be denied by law as a means of eliminating school debt. Freed from the incubus of heavy funded debt, the local district could devote its entire income to the more efficient administration of its current program. Since finance for new buildings would be determined by actual need and in accord with good educational designing, there would be fewer poorly placed and poorly built structures.

Overn (456) proposed a statewide pay-as-you-go policy of defraying local school building costs. All new buildings would be paid for by cash from a state fund, thus avoiding interest charges which in many instances amount to from 60 to 100 percent of the cost. Under this plan the state

would levy annually an amount for debt service and new buildings equal at least to the amount spent locally for debt service and new buildings throughout the state for the past five years. A district would be permitted to build only when it could justify its action on the grounds of service and economy. Since communities least able to do so are obliged to meet debt charges regardless of operating needs, the plan would relieve the burden at its sorest spot.

A technic for equalization of the burden of financing capital outlay and for providing minimum adequate schoolhousing for every district was developed by Weller (477,479). He determined the amount a district *could* raise annually toward an amortized cost of the number of housing (room) units needed. The difference between this sum and the total annual amortized cost of the building program represents what the state would contribute on an annual basis. The amount which would be contributed in twenty-five years is then found and paid in cash to the district. The district pays off the balance either at the uniform rate for the full period or at a heavier rate for a shorter period. Under this plan no community need pay a higher rate to provide school buildings than would the wealthiest district.

Local Support of Education

Research in the field of local support of education is, according to emerging philosophies, of most significance when related to the problem of equalizing support within the individual state. As states' abilities are entwined with a program of national participation, so to a similar degree the problem of local support is coupled with a sound, planned program of state participation. Dawson (422) made a critical and detailed analysis and evaluation of the fundamental relationships existing among three sources of support in regard to their contributions. Sears' study (466) also cut across all three phases of support for schools—local, state, and federal—and he based his suggestions on a well presented theory or philosophy of the problems and reasons underlying the entire question of free public education through the age of eighteen years for everyone.

Studies of school support in relation to local school units, such as have been conducted in the states of Ohio (453), Arkansas (403), Oklahoma (454), Arizona (402), California (407), Tennessee (472), Kentucky (436), North Carolina (451), Pennsylvania (458), and Illinois (434), are of importance. Research conducted under the direction of the United States Office of Education and the state departments of education in these states on the study of local school units will serve as bases for the determination of long-time planning programs for education. Sections in these studies devoted to such subjects as (a) the status of school finance—state and local support and indebtedness; (b) trends in financing public education; and (c) financial reorganization programs and their estimated costs are noteworthy contributions to studies of local funding of education.

Taxation and School Support

The whole problem of equalization of school support rests on the question of a satisfactory tax system. It seems imperative that professional educators become increasingly conversant with fundamental problems of taxation. This point of view is evidenced by several tax studies made by educators during the past three years. The following reviews are devoted to these studies and a few works more in the field of general taxation.

Chambers (409, 410), revealed new practices in some states of requiring minimum local tax rates and a change in sources of revenue. Michigan has established a minimum of a 2.5 mill tax for local districts before they can benefit from the new distribution act. This state is also changing the source of school monies from special allocated taxes to the general fund. Chambers showed how states vary greatly in the minimum local tax levy before equalization aid can be obtained. This variation ranges from 2.5 mills in Michigan to 30 mills in Oklahoma.

McNeely (441) pointed out that whereas most states establish annual or biennial appropriations for state aid, twelve states have special taxes for this purpose. Lundeen (440) showed how present revenue methods are inadequate and cited an increased enrolment from 4,155,350 pupils in 1929 to 6,719,000 in 1935 with a decreased revenue of from \$2,250,563,511 in 1929 to \$1,842,581,000 in 1935.

Costigan (417) showed that a federal system of taxation serves as an equalizer of wealth and of educational needs among the various states. Pulliam (463) indicated how the tremendous inequalities in the ratio of the wealth per child in the various states argues for the abandonment of the two basic ideas of local support and the general property tax. He contended that raising revenue for schools through the federal government will eliminate much criticism. Dawson (422) and Richmond (465) also claimed that inequalities in ability and an inadequate tax system have made necessary increased state and federal support.

Almack (400) gave an analysis of the tactics employed by anti-tax and pro-school forces. This study should be perused carefully by anyone confronted with forces working for the reduction of taxes for public school support. Almack's faith in a well-educated public is hopeful and is a good argument for the education of our citizenry.

Chism (414) showed that thirty states have sales taxes of some form, but that the effect of a retail sales tax of 2 percent when computed for all states and combined with the ability of these states to support education as determined by the Model Tax Plan would have the effect of decreasing the range in relative ability of the states to support education. Although the range in ability to pay is narrowed, this is accomplished by imposing more taxes on those least able to pay.

Such bulletins as those issued by the Tax Policy League (468, 469, 470, 471) are of importance to students of school finance. The Twentieth Century Fund (475) presented a survey of taxation and a future program of

taxation for the nation. The intent of this research is to give to its readers an understanding of the tax system as it now functions—federal, state, and local—and to offer suggestions on how our tax structure could be improved.

The Collection and Protection of Funds

Wilkins (480) weighed the advantages and disadvantages of having school taxes collected by the municipal tax department against those of having the school taxes collected by a separate school tax department in Texas. Schools employing a separate tax department were found not only to have failed to adjust the tax income period to the school expenditure period but to have a tax year that is more poorly adjusted than that of the schools employing the city tax department. Installment collections were more frequently employed by schools employing the city tax department. Schools having a separate school tax department were more inclined to build up interim reserves but had greater tax delinquency. Short-term loans were equally employed by the two systems and there was very little difference in the rate of interest paid. Overdrafts were more common and tax collections were found to be better among those using the city tax department. The cost of collection was found to be 2.81 percent in twenty-four systems employing the municipal tax department and 3.92 percent in twenty-four comparable systems employing a school tax department. There was a tendency for cities to take over responsibility for school bonds and to exercise undesirable control of the schools in cities employing the municipal tax collection department. Bonded debts tended to be slightly larger if separate tax collection departments were employed, but there was less difficulty in obtaining ready control of school funds. The schools of both groups lost very little through bank failures because funds were safeguarded by collateral securities. Regulation and supervision of safeguarding the school funds by the state department of education were found to have had a salutary effect. Leakage of funds was found more apt to occur in the handling of cash receipts of taxes, and in reporting unpaid certain taxes which had been paid, than at any other points. A thorough annual audit was found to be essential to safeguard tax funds. Schools employing a separate tax department tended strongly to include a larger territory than the city limits.

The Finance Division of the New York State Department of Education (449) prepared a manual outlining procedures for transacting the business of the district so as to afford a maximum of protection for district funds. Devices recommended for safeguarding funds included: "(1) two separate and independent sets of records of receipts and disbursements; (2) the separation of the authority to expend moneys from the custody of these moneys; (3) publicity of the treasurer's accounts; (4) a system of financial reports both by the treasurer and the accounting officer; (5) a review of the custodian's performance by the governing body; and (6) a requirement that at least two individuals take part in the act of disbursing money."

CHAPTER XI

Summary and Forecast

ALFRED D. SIMPSON

THE COMMITTEE'S TASK has been to review research. However much one may look for new horizons, one's job on a reviewing committee is to cover the research that exists. He may comment, and he may forecast; but, if he does not find the research that he hopes for, he cannot manufacture it—at least as a member of the committee. Hence, at the end of a long canvass, the writer is inclined to comment, not only on the paucity of research in this field, but also on the disconcerting insignificance of much of it.

How research in this field compares with that in other educational fields is beyond the writer to know. But he is certain that research in finance and business administration has so far failed to answer many important questions.

The first chapter of this *Review* was designed to reveal researches in the organization of education and its administrative framework. There has been some good research in relation to administrative units—even though coming after one hundred years of need. But the basic financial implications underlying the large organization of formal education, underlying the individual school as an educational unit, underlying the curriculum, and underlying the methods or processes of education, seem not to have caused a flurry in the minds of the active researchers.

As revealed in Chapter II, there is a dearth of penetrating analyses of the cost of education as now organized. We know little, as revealed by published researches, about the variations in the cost of school units within a given system. Only recently has there been any research consideration whatsoever given to the cost attendant upon the rise of specialization in educational processes. And yet how pregnant with significance! What have the psychological revelations as to transfer of training done to school costs? What would a lay understanding of "transfer" do to the public attitude towards the funding of education?

In the fields of the support of education there have been some bright spots—particularly in studies of federal participation and in relationships between control and support. Now in their infancy, studies in the area of controls promise much—and are much needed. The fields of general public administration and finance have far outstripped educational administration in the area of financial planning. Only at a few scattered points and in embryo stages has there been any attack upon the important problem of classification in educational finance accounting. Educational reporting in general has enjoyed an unresearched pictorial renaissance—thanks prob-

ably to the stimulus of New Deal-ish planning boards—but in financial reporting there is little of either renaissance or research.

It may be possible to characterize the shortcomings of research in these fields in terms of three deficiencies. First, our research in finance and business administration, with some notable exceptions, *lacks pertinence*. That is, it does not grapple with the large problem areas in the field. For example, we have accounting studies, but they are not focused searchingly upon such problem areas as classification, cost analysis, or service to administration. We have much consideration of educational reorganization, but little coordinated research pertinent to the financial implications of change, or contributory to a well-rounded consideration of reorganization proposals. We have had practically no significant studies relating to problems of financial planning or budgeting by individual schools in order that there may be a "wholeness," a unity, to the work of the school. And, is there no challenge to finance in the problem of preserving American democracy, even to the point of finding the very seed-beds of its germs?

Second, our research, with some notable exceptions, *lacks continuity*. The projects are isolated. This is a commonly recognized ill and one that persists despite the fact that attention has been given to it. A notable exception to this lack of continuity is to be found in the studies made by graduate students and post-doctoral workers in the field of state support, following the leadership of Mort. In this important area we have a long list of studies, one after another filling in gaps or carrying the research into refinement stages. If we could have such a continued and coordinated approach to research in the other areas of finance and business administration, we would develop a more valuable product.

Third, research in finance and business administration lacks *inventiveness*. By inventiveness is meant not simply the devising of new technics, or formulas. With only an occasional exception we may trace through the whole range of topics in finance and business administration and find little that is new either in the approach to a problem or in revelation from its pursuit. When the same approaches are repeated, without improvement, the results are likely to be standard, without refinement, and meaningless in their effect upon practice. Research in certain areas is stale. The same patterns have prevailed too long. Perhaps the fault lies in the hypothesis, the real germ center of research; instead of fertile variation, we find the core of stereotyped practice.

How can we get more pertinence, more continuity, more inventiveness into research? One can only hazard a few suggestions. The *Review* itself might well afford a medium of help. A symposium might aid in locating the seeds of pertinence, continuity, inventiveness, and other desirable characteristics now too generally lacking in research in this area. We might utilize the administrator's perspective by systematically tapping it, as has never been done, for the disclosure of pertinent areas and for the honest testing of research significance.

In 1933 the National Survey of School Finance, which unfortunately died in its youth because of the depression, published a volume of *Research Problems in School Finance*. This was perhaps the most serious attempt thus far made to bring about a type of research in this field pertinent to great problem areas. In 1935 the April number of the *Review*, in a less ambitious treatment, also included a chapter, entitled "A Forecast of Future Research in Financing of Education." There is little evidence that either of these has been seriously studied or followed by prospective research workers in finance and business administration. But they still stand there, monument like, and their assimilation constitutes one of the avenues to pertinence, to continuity, to inventiveness, etc.

Sometimes an infusion of new blood helps. We have an all too small group of workers who have come really to understand finance and business administration. These workers are constantly being pulled off into administration. Finance permeates all areas of education, and in a democracy its influence is such a critical determinant of direction and of progress, that research in this area may well ask for the transfer of the ablest of personnel. Why, for example, should not research workers of proved ability turn their backs upon psychology, philosophy, curriculum, and for a time bend their energies to infuse and illuminate the field which they are all too prone to consider a retardant to their work? Perhaps they would find a clue to a new educational economy. Possibly they could prove that education, in a country's economy, is worth more than its cost. Perhaps they could become, through this avenue, an even greater blessing to posterity. Anyone who can help us towards better research in finance, and the more prosaic business administration, let him come.

"Wi sic as he, where'er he be
May I be saved or damned."

BIBLIOGRAPHY ON FINANCE AND BUSINESS ADMINISTRATION

Chapter I. The Support of Education— Major Problems

1. ALABAMA GENERAL ASSEMBLY, JOINT RECESS COMMISSION ON AD VALOREM TAXATION AND HOMESTEAD EXEMPTIONS. *Report*, 1935. Montgomery, Ala.: Brown Printing Co., 1935. 56 p.
2. ALMACK, JOHN C. "Education for Adequate School Support." *Annals of the American Academy of Political and Social Science* 182: 101-15; November 1935.
3. AMERICAN RETAIL FEDERATION. *Chain Store Taxes: A Digest of Each State Law*. Washington, D. C.: the Federation, 1937. 27 p.
4. AMERICAN RETAIL FEDERATION. *Sales Taxes: A Digest of Each State Law*. Washington, D. C.: the Federation, 1936. 30 p.
5. ANDERSON, WILLIAM. *Local Government and Finance in Minnesota*. Minneapolis: University of Minnesota Press, 1935. 355 p.
6. BASTABLE, CHARLES F. *Public Finance*. Third edition. New York: Macmillan Co., 1903. 780 p.
7. BIRD, FREDERICK L. "The Five-Year Trend in Tax Delinquency." *Municipal Finance* 25-26; May 1935.
8. BIRD, FREDERICK L. *The Municipal Debt Load in 1935*. New York: Dun and Bradstreet, 1935. 30 p.
9. BIRD, FREDERICK L. *The Trend of Tax Delinquency, 1930-1936: in Cities of Over 50,000 Population*. New York: Dun and Bradstreet, 1937. 29 p.
10. BOLMEIER, E. C. "Recent Tendencies in Taxation for Public-School Support." *Elementary School Journal* 35: 415-22; February 1935.
11. BONBRIGHT, JAMES C. *The Valuation of Property*. New York: McGraw-Hill Book Co., 1937. 2 vols.
12. BUEHLER, ALFRED G. *Public Finance*. New York: McGraw-Hill Book Co., 1936. 632 p.
13. CARR, ROBERT K. *State Control of Local Finance in Oklahoma*. Norman: University of Oklahoma Press, 1937. 282 p.
14. CHAMBERS, M. M. "New Laws on Finance Passed Before Legislatures Adjourned." *Nation's Schools* 20: 29-31; August 1937.
15. CHISM, LESLIE L. *Economic Ability of the States to Finance Public Schools*. Contributions to Education, No. 669. New York: Teachers College, Columbia University, 1936. 169 p.
16. CHISM, LESLIE L. "Effect of the Retail Sales Tax on the Relative Ability of the States to Support Education." *Journal of Educational Research* 30: 44-46; September 1936.
17. COCHRAN, H. P. *Scientific Tax Reduction: Federal Tax Law and Procedure*. New York: Funk and Wagnalls Co., 1937. 757 p.
18. COLORADO DEPARTMENT OF EDUCATION. *Effects of Blanket Property Tax Limitation upon the Revenue of School Districts in Colorado*. Denver: the Department, 1936. 152 p. (Mimeo.)
19. CORNELL, FRANCIS G. *A Measure of Taxpaying Ability of Local School Administrative Units*. Contributions to Education, No. 698. New York: Teachers College, Columbia University, 1936. 114 p.
20. CRAWFORD, FINLA G. *The Gasoline Tax in the United States, 1934*. Fourth edition. Chicago: Public Administration Service, 1935. 46 p.
21. CRAWFORD, FINLA G. *The Gasoline Tax in the United States, 1936*. Fifth edition. Chicago: Public Administration Service, 1937. 50 p.
22. DAILY, CHARLES F. *Corporate Wealth in Oklahoma as a Basis of Common-School Support*. Doctor's thesis. Norman: University of Oklahoma, 1935. 228 p.
23. DAVISSON, MALCOLM M. *Property Tax Reduction in California*. Berkeley: Bureau of Public Administration, University of California, 1937. 33 p. (Mimeo.)

24. DIXON, HENRY A. *Administration of State Permanent School Funds as Illustrated by a Study of the Management of the Utah Endowment*. Los Angeles: University of Southern California Press, 1936. 145 p.
25. FLORIDA SPECIAL COMMITTEE ON TAXATION AND PUBLIC DEBT. *Report, 1935*. 188 p.
26. FORD, ROBERT S. *Realty Tax Delinquency in Michigan*. Ann Arbor: University of Michigan, 1937. 125 p.
27. FORD, ROBERT S. *Recent Developments in the Michigan Tax Situation*. Ann Arbor: University of Michigan, 1936. 26 p.
28. FORD, ROBERT S., and ORKIN, SIDNEY. *The Retail Sales Tax in Michigan*. Ann Arbor: University of Michigan, 1936. 24 p.
29. GAYER, ARTHUR D. *Public Works in Prosperity and Depression*. New York: National Bureau of Economic Research, 1935. 460 p.
30. GIRARD, RICHARD A. *The Scope for Uniformity in State Tax Systems*. Special Report of the New York State Tax Commission, No. 8. Albany: the Commission, 1935. 229 p.
31. GRAVES, W. BROOKE, editor. "Our State Legislators." *Annals of the American Academy of Political and Social Science* 195: 1-252; January 1938.
32. GROVES, HAROLD M. "Exemptions in Taxation." *Bulletin of the National Tax Association* 22: 2-7; October 1936.
33. HEER, CLARENCE. "Relations Between Federal, State, and Local Finances." *American Economic Review (Supplement)* 26: 174-81; March 1936.
34. HILLHOUSE, A. MILLER. *Municipal Bonds—A Century of Experience*. New York: Prentice-Hall, 1936. 579 p.
35. HILLHOUSE, A. MILLER, and WELCH, RONALD B. *Tax Limits Appraised*. Chicago: Public Administration Service, 1937. 40 p.
36. HINCKLEY, RUSSELL JOHN. *State Grants-in-Aid*. State of New York, Special Report of the New York State Tax Commission, No. 9. Albany: the Commission, 1935. 221 p.
37. HOLY, T. C. "Constitutional Tax Limitations and Their Influence on Education." *Twenty-fourth Annual Conference on Educational Measurements*. Bulletin of the School of Education, Vol. 13, No. 4. Bloomington: Indiana University, 1937. p. 36-42.
38. ILLINOIS TAX COMMISSION. *Tax-rate Limits of Illinois Local Governments, 1925-1936*. Springfield, Ill.: the Commission, 1936. 79 p.
39. INTERSTATE COMMISSION ON CONFLICTING TAXATION. *Conflicting Taxation: 1935 Progress Report*. Chicago: American Legislators' Association and Council of State Governments, 1935. 202 p.
40. JENSEN, JENS P. "The General Property Tax, the Mainstay of Local Fiscal Autonomy." *Annals of the American Academy of Political and Social Science* 183: 124-29; January 1936.
41. JENSEN, JENS P. *Government Finance*. New York: Thomas Y. Crowell Co., 1937. 595 p.
42. JENSEN, JENS P. *Problems of Public Finance*. New York: Thomas Y. Crowell Co., 1924. 606 p.
43. KEESECKER, WARD W. *Legislative Action in 1935 Affecting Financial Support of Public Education*. Circular No. 158 Washington, D. C.: Office of Education, U. S. Dept. of the Interior, 1936. 50 p. (Mimeo.)
44. KEESECKER, WARD W. "A Review of Educational Legislation 1935 and 1936." *Biennial Survey of Education in the United States: 1934-36*. Vol. I. U. S. Dept. of the Interior, Office of Education, Bulletin, 1937, No. 2. Washington, D. C.: Government Printing Office, 1937. Chapter 8, 39 p. (Advance pages.)
45. KEYWORTH, M. R. "School District Debts." *The Third Yearbook of School Law, 1935*. Washington, D. C.: M. M. Chambers (722 Jackson Place), 1935. Chapter 10, p. 73-83.
46. KING, CLYDE L. *Public Finance*. New York: Macmillan Co., 1935. 602 p.
47. LEET, GLEN, and PAIGE, R. M., editors. *Property Tax Limitation Laws*. Revised edition. Chicago: Public Administration Service, 1936. 92 p.
48. LELAND, SIMEON E. *The Fiscal Problem of Education in Illinois*. Springfield, Ill.: Du Page Valley Division of the Illinois State Teachers Association, 1935. 34 p.
49. LEONARD, J. M., and MOHAUPT, ROSINA. *Exemption of Homesteads from Taxation*. Report No. 144. Detroit, Mich.: Detroit Bureau of Governmental Research, 1937. 34 p.

50. LOEB, HAROLD, director. *Report of the National Survey of Potential Capacity*. New York: Emergency Relief Bureau, New York City Housing Authority, 1935. 358 p.
51. LUTZ, HARLEY LEIST. *Public Finance*. New York: D. Appleton and Co., 1924. 681 p.
52. LUTZ, HARLEY LEIST. *Public Finance*. Third edition. New York: D. Appleton-Century Co., 1936. 940 p.
53. MAGILL, ROSWELL F. *Taxable Income*. New York: Ronald Press Co., 1936. 437 p.
54. MANNING, RAYMOND E. "State Tax Legislation, 1935." *Bulletin of the National Tax Association* 20: 171-73, 194-99, 230-35, 270-77; March-June 1935.
55. MANNING, RAYMOND E. "State Tax Legislation: 1936." *Bulletin of the National Tax Association* 21: 73-79; December 1936.
56. MANNING, RAYMOND E. "State Tax Legislation: 1937." *Bulletin of the National Tax Association* 22: 211-14; April 1937. 23: 4-8; October 1937.
57. MARTIN, ROBERT F. *Income in Agriculture: 1929-1935*. New York: National Industrial Conference Board, 1936. 168 p.
58. MARTIN, ROBERT F. *National Income and Its Elements*. New York: National Industrial Conference Board, 1936. 134 p.
59. MINNESOTA LEGISLATIVE TAX COMMISSION OF INVESTIGATION AND INQUIRY. *Report, 1937*. St. Paul: the Commission, 1937. 136 p.
60. MOHAUPT, ROSINA. "Comparative Tax Rates of 259 Cities, 1936." *National Municipal Review* 25: 722-35; December 1936.
61. MOHAUPT, ROSINA. "Comparative Tax Rates of 279 Cities, 1937." *National Municipal Review* 26: 585-99; December 1937.
62. MORT, PAUL R., and CORNELL, FRANCIS G. *Adaptability of Public School Systems*. New York: Teachers College, Columbia University, 1938. (In press.)
63. MORT, PAUL R., director. *Federal Support for Public Education*. New York: Teachers College, Columbia University, 1936. 334 p.
64. MOULTON, HAROLD G. *Income and Economic Progress*. Washington, D. C.: Brookings Institution, 1935. 191 p.
65. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. "The Efforts of the States To Support Education." *Research Bulletin* 14: 103-63; May 1936.
66. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. "Federal Support for Education; the Issues and the Facts." *Research Bulletin* 15: 155-83; September 1937.
67. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. "Financing Public Education." *Research Bulletin* 15: 1-54; January 1937.
68. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. *High Spots in School Legislation*. Washington, D. C.: the Association, 1934 to present. (Mimeo.)
69. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. *School Finance Systems*. Washington, D. C.: the Association, 1934-35 and 1937 revision.
70. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. *State School Legislation, 1937*. Washington, D. C.: the Association, 1937. 21 p. (Mimeo.)
71. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. *State School Revenue Legislation—1934*. Washington, D. C.: the Association, 1936. 35 p. (Mimeo.)
72. NATIONAL EDUCATION ASSOCIATION AND DEPARTMENT OF SUPERINTENDENCE, EDUCATIONAL POLICIES COMMISSION. *The Unique Function of Education in American Democracy*. Washington, D. C.: the Commission, 1937. 129 p.
73. NATIONAL INDUSTRIAL CONFERENCE BOARD. *Cost of Government in the United States: 1933-1935*. New York: the Board, 1936. 98 p.
74. NATIONAL INDUSTRIAL CONFERENCE BOARD. *Cost of Government in the United States: 1934-1936*. New York: the Board, 1937. 137 p.
75. NELSON, CARL L.; BLAKEY, GLADYS C.; and BLAKEY, ROY G. *Sales Taxes*. Publication No. 48. Minneapolis: League of Minnesota Municipalities, 1935. 88 p.
76. NEWCOMER, MABEL. *Central and Local Finance in Germany and England*. New York: Columbia University Press, 1937. 381 p.
77. NEWCOMER, MABEL. "Coördination of Federal, State, and Local Tax Systems." *Annals of the American Academy of Political and Social Science* 183: 39-47; January 1936.
78. NORTON, JOHN K., and NORTON, MARGARET ALLTUCKER. *Wealth, Children and Education*. New York: Teachers College, Columbia University, 1937. 100 p.
79. OKLAHOMA STATE TAX COMMISSION. *A Study of the Probable Immediate Effect of Homestead Tax Exemption in Oklahoma*. Bulletin No. 2. Oklahoma City: the Commission, 1937.

80. OWEN, RALPH DORNFELD. "School District Indebtedness." *The Fourth Yearbook of School Law*, 1936. Washington, D. C.: M. M. Chambers (722 Jackson Place), 1936. Chapter 10, p. 68-74.
81. OWEN, RALPH DORNFELD. "School District Indebtedness." *The Fifth Yearbook of School Law*, 1937. Washington, D. C.: American Council on Education, 1937. Chapter 10, p. 84-91.
82. POWELL, ALDEN L. *National Taxation of State Instrumentalities*. Urbana: University of Illinois, 1936. 166 p.
83. REEVES, FLOYD W. "The Advisory Committee on Education." *School Executive* 57: 121-22, 138; November 1937.
84. REUSSER, WALTER C. "Permanent School Funds in Wyoming." *School and Society* 46: 247-48; August 21, 1937.
85. RIGHTOR, C. E. "Comparative Tax Rates of 301 Cities, 1935." *National Municipal Review* 24: 686-98; December 1935.
86. ROBERTS, WARREN ALDRICH. *Arizona Tax Problems*. Tucson: University of Arizona, 1935. 29 p.
87. SHIRRAS, GEORGE F. *Science of Public Finance*. Third edition. New York: Macmillan Co., 1936. 2 vols.
88. SHULTZ, WILLIAM J. *American Public Finance and Taxation*. New York: Prentice-Hall, 1931. 635 p.
89. SILVERHERZ, JOSEPH D. *The Assessment of Real Property in the United States*. Special Report of the New York State Tax Commission, No. 10. Albany: the Commission, 1936. 396 p.
90. SLAUGHTER, JOHN A. *Income Received in the Various States, 1929-1935*. New York: National Industrial Conference Board, 1937. 167 p.
91. SNAVELY, TIPTON R. *A Study of the Fiscal System of Tennessee*. Nashville: Tennessee Planning Commission, 1936. 54 p.
92. STUDENSKI, PAUL, editor. "Government Finance in the Modern Economy." *Annals of the American Academy of Political and Social Science* 183: 1-313; January 1936.
93. STUDENSKI, PAUL, editor. *Taxation and Public Policy*. New York: Richard R. Smith Co., 1936. 267 p.
94. TAX POLICY LEAGUE. "Chain Store Taxes." *Tax Policy* 4: 1-28; June 1937. New York: the League.
95. TAX POLICY LEAGUE. *How Shall Business Be Taxed?* New York: the League, 1937. 175 p.
96. TAX POLICY LEAGUE. *The Place of State Income Taxation in the Revenue Systems of the States*. New York: the League, 1935. 16 p.
97. TAX POLICY LEAGUE. "Pressure Groups and Direct Taxation." *Tax Policy* 4: 1-13; April 1937. New York: the League.
98. TAX POLICY LEAGUE. "State Tax Legislation in 1937." *Tax Policy* 4: 1-15; July 1937. New York: the League.
99. TAX POLICY LEAGUE. "State Tax Yield Statistics: 1937." *Tax Policy* 5: 1-53; November-December 1937. New York: the League.
100. TAX RESEARCH FOUNDATION. *Tax Systems of the World*. Sixth edition. New York: Commerce Clearing House, 1935. 365 p.
101. TREANOR, G. R., and BLAKEY, ROY G. *Inheritance Taxes*. Publication No. 47. Minneapolis: League of Minnesota Municipalities, 1935. 47 p.
102. TRULL, EDNA. *Resources and Debts of the Forty-Eight States*. New York: Dun and Bradstreet, 1935. 14 p.
103. TULLER, WALTER K. *A Treatise on the Taxing Power with Particular Application to the State Income Tax*. Chicago: Callaghan and Co., 1937. 460 p.
104. TWENTIETH CENTURY FUND. *Facing the Tax Problem*. New York: the Fund, 1937. 606 p.
105. TWENTIETH CENTURY FUND. *The National Debt and Government Credit*. New York: the Fund, 1937. 171 p.
106. TWENTIETH CENTURY FUND. *Studies in Current Tax Problems*. New York: the Fund, 1937. 303 p.
107. U. S. DEPARTMENT OF COMMERCE, BUREAU OF FOREIGN AND DOMESTIC COMMERCE. *National Income in the United States, 1929-35*. Washington, D. C.: Government Printing Office, 1936. 304 p.

108. U. S. SOCIAL SECURITY BOARD, BUREAU OF RESEARCH AND STATISTICS. *The Fiscal Capacity of the States, a Source Book*. Public Finance Series, Vol. I, No. 1. Washington, D. C.: the Board, 1937.
109. U. S. TREASURY DEPARTMENT, DIVISION OF RESEARCH AND STATISTICS. *Collections from Selected State-Imposed Taxes: 1930-1936*. Washington, D. C.: Government Printing Office, 1936. 92 p.
110. VAN DE WOESTYNE, ROYAL S. *State Control of Local Finance in Massachusetts*. Harvard Economics Studies, Vol. 49. Cambridge: Harvard University Press, 1935. 184 p.
111. WALKER, WILLIAM PAUL, and WEITZELL, EVERETT C. *The Retail Sales Tax, with Particular Reference to Administrative Problems of Its Collection*. Special Bulletin No. 1. College Park, Md.: Agricultural Experiment Station, University of Maryland, 1936. 27 p.
112. WALKER, WILLIAM PAUL, and HAMILTON, A. B. *Tax Delinquency in Maryland, with Special Reference to Agriculture*. Bulletin No. 381. College Park, Md.: Agricultural Experiment Station, University of Maryland, 1935. p. 155-85.
113. WILKINS, E. G. *Public School Tax Management in Texas*. Contributions to Education, No. 703. New York: Teachers College, Columbia University, 1937. 105 p.
114. YAKEL, RALPH. "Taxation for Public Education." *The Third Yearbook of School Law*, 1935. Washington, D. C.: M. M. Chambers (722 Jackson Place), 1935. Chapter 11, p. 83-92.
115. YAKEL, RALPH. "Taxation for Public Education." *The Fourth Yearbook of School Law*, 1936. Washington, D. C.: M. M. Chambers (744 Jackson Place), 1936. Chapter 11, p. 75-82.
116. YAKEL, RALPH. "Taxation for Public Education." *The Fifth Yearbook of School Law*, 1937. Washington, D. C.: American Council on Education, 1937. Chapter 11, p. 92-99.
117. ZELLER, BELLE. *Pressure Politics in New York*. New York: Prentice-Hall, 1937. 310 p.

Chapter II. Financial Planning

118. ADVISORY COMMITTEE ON EDUCATION. *Report of the Committee*. Washington, D. C.: Government Printing Office, 1938. 243 p.
119. CHISM, LESLIE L. *The Economic Ability of the States to Finance Public Schools*. Contributions to Education, No. 669. New York: Teachers College, Columbia University, 1936. 169 p.
120. CORNELL, FRANCIS G. *A Measure of Taxpaying Ability of Local School Administrative Units*. Contributions to Education, No. 698. New York: Teachers College, Columbia University, 1936. 114 p.
121. COVERT, TIMON. *State Provisions for Equalizing the Cost of Public Education*. U. S. Dept. of the Interior, Office of Education, Bulletin, 1936, No. 4. Washington, D. C.: Government Printing Office, 1936. 49 p.
122. DE YOUNG, CHRIS A. *Budgeting in Public Schools*. Garden City, N. Y.: Doubleday, Doran and Co., 1936. 610 p.
123. ENGELHARDT, N. L. "Modern Trends in School Planning as a Result of Changing Curricula." *Proceedings, 1937*. National Association of Public School Business Officials. Pittsburgh: the Association (Sec.: H. W. Cramblet, Board of Education), 1937. p. 76-81.
124. FALK, HERBERT A. "The Promise and Performance of P. W. A." *School Executive* 55: 325-27; May 1936.
125. FERRELL, THOMAS. *Relation Between Current Expenditures and Certain Measures of Efficiency in Kentucky County Graded School Systems*. Doctor's thesis. Nashville, Tenn.: George Peabody College for Teachers, 1936.
126. "The Financial Condition of the Massachusetts Schools." *School and Society* 41: 596-97; May 4, 1935.
127. FLOCKEN, IRA G. "The School Budget." *Proceedings, 1935*. National Association of Public School Business Officials. Pittsburgh: the Association (Sec.: H. W. Cramblet, Board of Education), 1935. p. 60-72.
128. HAHNE, ERNEST H. "Economic Aspects of Federal Aid to Schools." *School and Society* 41: 313-21; March 9, 1935.

129. HAMON, RAY L. "Financing the School Plant." *American School Board Journal* 91: 14, 68; August 1935.
130. HUDNALL, J. MAYES. "The New School Plant of Delaware." *School Executive* 55: 257-59, 268; March 1936.
131. JENKINS, H. E. "Tyler Balances the School Budget." *American School Board Journal* 91: 40-41; October 1935.
132. LUDEMAN, W. W. "Progress in Equalizing School Costs." *American School Board Journal* 94: 18, 96; March 1937.
133. MOE, GUSTAVE A. "Budgeting and Accounting for Local School Districts in New York State." *Proceedings, 1937. National Association of Public School Business Officials. Pittsburgh: the Association (Sec.: H. W. Cramblet, Board of Education), 1937. p. 200-14.*
134. MOEHLMAN, ARTHUR B. "Credit—A Stabilizer." *Nation's Schools* 17: 13-14; May 1936.
135. MOEHLMAN, ARTHUR B. *Social Interpretation*. New York: D. Appleton-Century Co., 1938. 485 p.
136. MORT, PAUL R. *Federal Support for Public Education*. New York: Teachers College, Columbia University, 1936. 334 p.
137. MULLANY, GEORGE G. "The San Francisco School-Reconstruction Program and the Field Act." *American School Board Journal* 94: 64, 66, 68; January 1937.
138. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. "The Efforts of the States To Support Education." *Research Bulletin* 14: 101-64; May 1936.
139. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. "Federal Support for Education." *Research Bulletin* 15: 153-84; September 1937.
140. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. "Financing Public Education." *Research Bulletin* 15: 1-88; January 1937.
141. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. "School Finance." *Secondary Education* 5: 149-54; May 1936. Washington, D. C.: Department of Secondary Education, National Education Association.
142. NEW YORK STATE DEPARTMENT OF EDUCATION, FINANCE DIVISION. *School Accounting Documents for the Guidance of Boards of Education*. University of the State of New York Bulletin No. 1094. Albany: the Department, 1936. 38 p.
143. NEWCOMER, MABEL. *An Index of the Taxpaying Ability of State and Local Governments*. New York: Teachers College, Columbia University, 1935. 85 p.
144. NORTON, JOHN K., and NORTON, MARGARET ALLTUCKER. *Wealth, Children and Education*. New York: Teachers College, Columbia University, 1937. 100 p.
145. OKLAHOMA STATE DEPARTMENT OF EDUCATION, DIVISION OF RESEARCH AND SERVICE. *A Uniform Financial Procedure for General Fund Expenditures in Oklahoma Schools*. Bulletin No. 135. Oklahoma City: the Department, 1933. 52 p.
146. OVERN, A. V. "Educational Program of the County." *School Executive* 56: 147; December 1936.
147. OVERN, A. V. "A Statewide Pay-As-You-Go Policy for Local Building Costs." *Nation's Schools* 16: 27-28; August 1935.
148. PAULY, FRANK R. "Financing the Schools of Oklahoma." *School Executive* 55: 212-14; February 1936.
149. REEVES, FLOYD W. "Federal Relations." *Nation's Schools* 21: 25-27; March 1938.
150. SAN FRANCISCO PUBLIC SCHOOLS. *Report of the Superintendent*. San Francisco: Board of Education, 1936. 166 p.
151. STALEY, A. H. "A Building-Replacement Program Completed in Hastings, Nebraska." *American School Board Journal* 94: 41-44; March 1937.
152. STRAYER, GEORGE D. "Today's Problems in Financing Education." *Proceedings, 1937. National Association of Public School Business Officials. Pittsburgh: the Association (Sec.: H. W. Cramblet, Board of Education), 1937. p. 115-19.*
153. TRENT, W. W. "Educational Advances in West Virginia." *Nation's Schools* 16: 22-25; July 1935.
154. VAN KLEECK, E. R. "School Finance and the Social Problems of Population and Health." *American School Board Journal* 91: 15-17, 68-69; August 1935.
155. VILES, N. E. "The Business of State School Administration." *American School Board Journal* 91: 37-38, 73; December 1935.
156. WELLER, GERALD M. "Answer to Housing Problem." *Nation's Schools* 18: 40; October 1936.
157. WELLER, GERALD M. "A Plan for State Equalization of Capital Outlays for Public School Buildings." *American School Board Journal* 91: 23-24; August 1935.

158. WILKINS, EUGENE G. *Public School Tax Management in Texas*. Contributions to Education, No. 703. New York: Teachers College, Columbia University, 1937. 105 p.

Chapter III. The Financial Implications of School Organization

159. ARKANSAS STATE DEPARTMENT OF EDUCATION. *Study of Local School Units in Arkansas*. Little Rock: the Department, 1937. 214 p. (Prepared in cooperation with the U. S. Office of Education.)
160. AXTELL, PAUL H. "The Power to Create and Alter School Districts." *American School Board Journal* 95: 23-24; November 1937.
161. BURKE, ARVID J., and ALEXANDER, CARTER. "Guide to the Literature on Public-School Administration." *Elementary School Journal* 37: 764-78; June 1937.
162. BURKE, ARVID J. *Proposed Changes in Financial Support for Rural Schools in New York State*. Unpublished manuscript. New York: Teachers College, Columbia University, 1936.
163. BURKE, ARVID J. "State Aid for Reorganization." *Nation's Schools* 19: 35-36; April 1937.
164. CALDWELL, ALEXANDER B., and BURKE, ARVID J. *A Study of Financial Support and Educational Opportunity in the One-Teacher School Districts of New York State, 1928-29 to 1934-35*. Albany: New York State Teachers Association, 1936. 118 p.
165. CALIFORNIA STATE DEPARTMENT OF EDUCATION. *Study of Local School Units in California*. Sacramento: the Department, 1937. 137 p. (Prepared in cooperation with the U. S. Office of Education.)
166. CAVINS, L. V. "Organization and Operation of the County Unit in West Virginia." *The Application of Research Findings to Current Educational Practices*. Official Report of 1935 Meeting. Washington, D. C.: American Educational Research Association, a department of the National Education Association, 1935. p. 236-42.
167. CHAMBERLAIN, LEO M., and MEECE, LEONARD E. *The Local Unit for School Administration in the United States*. Bulletins, Volume 8, Nos. 3 and 4. Lexington: College of Education, University of Kentucky, 1936. 2 parts.
168. CHAMBERS, M. M. "Corporation With a Soul." *Nation's Schools* 19: 33-34; March 1937.
169. COCKING, WALTER D. "Reducing School Bills by the Consolidation of Districts." *Proceedings, 1936*. St. Louis, Mo.: National Association of Public School Business Officials, 1936. p. 89-102.
170. COOK, KATHERINE M., editor. *Reorganization of School Units*. U. S. Dept. of the Interior, Office of Education, Bulletin, 1935. No. 15. Washington, D. C.: Government Printing Office, 1936. 91 p.
171. COOK, KATHERINE M., editor. "Review of Conditions and Developments in Education in Rural and Other Sparsely Settled Areas." *Biennial Survey of Education in the United States: 1934-35*. U. S. Dept. of the Interior, Office of Education, Bulletin, 1937, No. 2. Washington, D. C.: Government Printing Office, 1937. Chapter 5, 70 p. (Advance pages.)
172. COVERT, TIMON. "State Aid for Adult Education." *School Life* 22: 162; February 1937.
173. COXE, WARREN W. "Basic Considerations in Appraising a School Organization." *Appraising the Elementary-School Program*. Sixteenth Yearbook. Washington, D. C.: Department of Elementary School Principals, National Education Association, 1937. p. 255-62.
174. CYR, FRANK W. "Needed Research on the Reorganization of School Districts in Rural Areas." *Teachers College Record* 38: 293-315; January 1937.
175. DAWSON, HOWARD A. "Better Instruction through the Reorganization of School Units." *Peabody Journal of Education* 14: 7-19; July 1936.
176. DE SILVA, LIONEL. "Financial Economies of the Inglewood Grouping Policy." *American School Board Journal* 93: 41-42; September 1936.
177. EASTBURN, LACEY A., and GARRETSON, O. K. "Class Size Investigations in the Phoenix Union High School." *North Central Association Quarterly* 11: 413-20; April 1937.

178. EULER, HARRISON L. *County Unification in Kansas*. Contributions to Education, No. 645. New York: Teachers College, Columbia University, 1935. 92 p.
179. FOWLER, M. M. "The North Carolina System of State Control." *Proceedings*, 1936. St. Louis, Mo.: National Association of Public School Business Officials, 1936. p. 230-35.
180. FOWLKES, JOHN GUY. "The Relation between Size of Staffs and the Curriculum Offerings in Wisconsin High Schools (Abstract)." *The Role of Research in Educational Progress*. Official Report of 1937 Meeting. Washington, D. C.: American Educational Research Association, a department of the National Education Association, 1937. p. 24-25.
181. FOWLKES, JOHN GUY, and SKEWES, GEORGE J. "Tuition Policies for Non-Resident High-School Pupils." *School Review* 44: 425-33; June 1936.
182. FRISWOLD, I. O. "Determining the Cost of an Adequate and Efficient Bus Transportation System." *Proceedings*, 1936. National Association of Public School Business Officials. Pittsburgh: the Association (Sec.: H. W. Cramblet, Board of Education), 1936. p. 117-25.
183. GRACE, ALONZO G. "Development of Satisfactory Units of School Administration." *National Municipal Review* 26: 164-67, 209; April 1937.
184. GRIFFEY, CARL H. *The History of Local School Control in the State of New York*. Contributions to Education, No. 683. New York: Teachers College, Columbia University, 1936. 135 p.
185. HANSEN, GEORGE H. *A Regional Redistricting Plan for the State of Utah*. Brigham Young University Studies No. 5. Provo, Utah: the University Press, 1937. 59 p.
186. HIGSMITH, J. HENRY. "North Carolina's State-Supported Public-School System." *American School Board Journal* 91: 17-19; November 1935.
187. HOLMSTEDT, RALEIGH W. *Factors Affecting the Organization of School Attendance Units*. Bulletin Vol. 8, No. 3. Bloomington, Ind.: School of Education, Indiana University, 1934. 32 p.
188. HOLY, T. C. "Statewide Study of Local School Units in Ohio (Abstract)." *The Role of Research in Educational Progress*. Official Report of 1937 Meeting. Washington, D. C.: American Educational Research Association, a department of the National Education Association, 1937. p. 10-12.
189. HUDNALL, J. MAYES. "The State as the Unit of Support and Control for Public Education in Delaware." *Abstract of Theses and Reports for Higher Degrees*, 1936. University of Colorado Studies, Vol. 24. Boulder, Colo.: the University, 1936. p. 38-39.
190. HYDE, RICHARD E. "A Survey of Local School Attendance Units in West Virginia." *The Role of Research in Educational Progress*. Official Report of 1937 Meeting. Washington, D. C.: American Educational Research Association, a department of the National Education Association, 1937. p. 16-18.
191. ILLINOIS DEPARTMENT OF PUBLIC INSTRUCTION. *Study of Local School Units in Illinois*. Springfield, Ill.: the Department, 1937. 158 p. (Prepared in cooperation with the U. S. Office of Education.)
192. JESSEN, CARL A. "Trends in Secondary Education." *Biennial Survey of Education in the United States: 1934-36*. Washington, D. C.: Government Printing Office, 1937. Chapter 2, 44 p. (Advance pages.)
193. JONES, HOWARD P. "Effect of the Depression on State-Local Relations." *National Municipal Review* 25: 465-70; August 1936.
194. KASER, LOUIS J. *A County Unit Plan of School Administration for Eight Counties in New Jersey*. Burlington, N. J.: the Author, 1935. (Mimeo.)
195. KENTUCKY STATE DEPARTMENT OF EDUCATION. *A Study of Local School Units in Kentucky*. Frankfort, Ky.: the Department, 1937. 126 p. (Prepared in cooperation with the U. S. Office of Education.)
196. KILZER, L. R. "Choosing Among the Three Types of Six Year High Schools." *American School Board Journal* 90: 18, 74; February 1935.
197. KILZER, L. R. "How Local Public Junior Colleges Are Financed." *School Review* 45: 686-94; November 1937.
198. LAMBERT, A. C., and WOOLF, GOLDEN. "Statutory Theory of the Need for Transporting Pupils at Public Expense." *School and Society* 45: 816-19; June 12, 1937.
199. LAMBERT, A. C. "The Structure of School-Attendance Areas." *American School Board Journal* 94: 35-38; June 1937.

200. LAMBERT, A. C. *A Study of Some Factors that Affect the Need for the Transportation of Pupils to and from Schools at Public Expense, with Special Reference to Certain Alleged Effects of the Density of Population upon this Need.* Unpublished manuscript. Stanford University, Calif.: Stanford University, 1935.
201. LAMBERT, A. C. "Trends in the Transportation of School Children in the United States." *American School Board Journal* 94: 37, 40; April 1937.
202. MORPHET, EDGAR L. "Capital Outlay in the School Finance Program." *American School Board Journal* 94: 19-20, 99; June 1937. 95: 19-21; July 1937.
203. MORPHET, EDGAR L. "Capital Outlay in the School Program." *Role of Research in Educational Progress.* Official Report of 1937 Meeting. Washington, D. C.: American Educational Research Association, a department of the National Education Association, 1937. p. 12-14.
204. MORPHET, EDGAR L. "A Technic for Determining Teacher and Transportation Unit for a Minimum or Equalization Program." *Reconstructing Education Through Research.* Official Report of 1936 Meeting. Washington, D. C.: American Educational Research Association, a department of the National Education Association, 1936. p. 96-101.
205. MORRISON, HENRY C. "What Are the Limits of Public Education?" *National Municipal Review* 25: 97-99; February 1935.
206. NATIONAL EDUCATION ASSOCIATION and AMERICAN ASSOCIATION OF SCHOOL ADMINISTRATORS, EDUCATIONAL POLICIES COMMISSION. *A Bibliography on Education in the Depression.* Washington, D. C.: the Commission, 1937. 118 p.
207. NATIONAL EDUCATION ASSOCIATION and DEPARTMENT OF SUPERINTENDENCE, EDUCATIONAL POLICIES COMMISSION. *A Guide to Studies of Educational Resources.* Washington, D. C.: the Commission, 1936. 70 p. (Mimeo.)
208. NATIONAL EDUCATION ASSOCIATION and AMERICAN ASSOCIATION OF SCHOOL ADMINISTRATORS, EDUCATIONAL POLICIES COMMISSION. *Research Memorandum on Education in the Depression.* Bulletin 28. New York: Social Science Research Council, 1937. 173 p.
209. NATIONAL EDUCATION ASSOCIATION and AMERICAN ASSOCIATION OF SCHOOL ADMINISTRATORS, EDUCATIONAL POLICIES COMMISSION. *The Structure and Administration of Public Education in the United States.* Washington, D. C.: the Commission, 1937. 16 p.
210. NORTH CAROLINA STATE DEPARTMENT OF PUBLIC INSTRUCTION. *Study of Local School Units in North Carolina.* Raleigh, N. C.: the Department, 1937. 184 p. (Prepared in cooperation with the U. S. Office of Education.)
211. NORTON, JOHN K. "Future Development of Public Education." *National Municipal Review* 25: 100-104, 113; February 1935.
212. OERTEL, ERNEST E. "The Basic Problem of School District Organization." *American School Board Journal* 93: 24-26; September 1936.
213. OHIO STATE DEPARTMENT OF EDUCATION. *Study of Local School Units in Ohio.* Columbus: the Department, 1937. 271 p. (Prepared by T. C. Holy and John A. McKnight in cooperation with the U. S. Office of Education.)
214. OVERN, A. V. "The Problem of Small School District Units." *School and Society* 44: 601; November 7, 1936.
215. PEELE, JOHN. "The State Runs the School in North Carolina." *National Municipal Review* 26: 181-84; April 1937.
216. REAVIS, WILLIAM C., chairman. "School Organization." *Review of Educational Research* 7: 357-446; October 1937.
217. RIDDLE, JOHN I. *The Six-Year Rural High School.* Contributions to Education, No. 737. New York: Teachers College, Columbia University, 1937. 101 p.
218. ROBERTS, ROY W. "Factors Affecting the Cost of Pupil Transportation." *Journal of Educational Research* 29: 332-38; January 1936.
219. SEARS, JESSE B. "Getting the Schools Out of the Depression." *Elementary School Journal* 36: 417-23; February 1936.
220. SEYFERT, WARREN C. *School Size and School Efficiency.* Cambridge: Harvard University Press, 1937. 316 p.
221. SIMPSON, ALFRED D., chairman. "Finance and Business Administration." *Review of Educational Research* 5: 121-84; April 1935.
222. SIMPSON, ALFRED D. "Recent Experiences in Finance in New York State." *Reconstructing Education Through Research.* Official Report of 1936 Meeting. Washington, D. C.: American Educational Research Association, a department of the National Education Association, 1936. p. 101-11.

223. STUDENSKI, PAUL, editor. "Governmental Finance in the Modern Economy." *Annals of the American Academy of Political and Social Science* 183: 1-315; January 1936.
224. SUTTON, D. H., and HOLY, T. C. "The Study of Local School Units in Ohio." *Educational Research Bulletin (Ohio State University)* 16: 169-81, 196; October 20, 1937.
225. TEAL, FRED L. "School Improvement in West Virginia through the County-Unit Plan." *American School Board Journal* 93: 56-57; September 1936.
226. TENNESSEE STATE DEPARTMENT OF EDUCATION. *A Study of Local School Units in Tennessee*. Nashville, Tenn.: the Department, 1937. 206 p. (Prepared in cooperation with the U. S. Office of Education.)
227. U. S. DEPARTMENT OF THE INTERIOR, OFFICE OF EDUCATION. *Handbook of Procedures for Planning the Reorganization of Local School Units*. Circular No. 156. Washington, D. C.: the Office, January 1936. 54 p. (Mimeo.)
228. UTAH COMMITTEE TO STUDY OPERATIONS OF STATE GOVERNMENT. *Junior College Study*. Salt Lake City: the Committee, 1936. 63 p.
229. UTAH COMMITTEE TO STUDY OPERATIONS OF STATE GOVERNMENT. *School Finance Study and a Study of Consolidation of Utah School Districts*. Salt Lake City: the Committee, 1936. 179 p.
230. WAGER, PAUL W. "Effects of North Carolina's Centralization." *National Municipal Review* 26: 572-77; December 1937.
231. WEHRWEIN, GEORGE S., and BAKER, J. A. "The Cost of Isolated Settlement in Northern Wisconsin." *Rural Sociology* 2: 253-65; September 1937.
232. WEHRWEIN, GEORGE S., and BAKER, J. A. "Relocation of Non-conforming Land Users of the Zoned Counties in Wisconsin." *Journal of Land and Public Utility Economics* 12: 248-55; August 1936.
233. WELLER, GERALD M. "Federal Aid for School-Building Construction." *American School Board Journal* 91: 25-26, 81; November 1935.
234. WELLER, GERALD M. "A Plan for State Equalization of Capital Outlays for Public School Buildings." *American School Board Journal* 91: 23-24; August 1935.

Chapter IV. Budgetary Procedure

235. AKERLY, HAROLD E. "School Budget as Effective Publicity." *National Municipal Review* 26: 582-84, 589; December 1937.
236. BOLIN, PAUL LEON. *A Study of Budgetary Procedure in Schools of Illinois*. Master's thesis. Nashville, Tenn.: George Peabody College for Teachers, 1935.
237. CAMPBELL, RAYMOND GUY. *State Supervision and Regulation of Budgetary Procedure in Public School Systems*. Contributions to Education, No. 637. New York: Teachers College, Columbia University, 1935. 111 p.
238. DE YOUNG, CHRIS A. *Budgeting in Public Schools*. Garden City, N. Y.: Doubleday, Doran and Co., 1936. 610 p.
239. ENGELHARDT, N. L., and ENGELHARDT, FRED. *Survey Manual for the Business Administration in Public School Systems*. New York: Teachers College, Columbia University, 1935. 156 p.
240. FLOCKEN, IRA G. "School Budget." *Proceedings, 1935*. National Association of Public School Business Officials. Pittsburgh: the Association (Sec.: H. W. Cramblet, Board of Education), 1935. p. 60-72.
241. FOWLKES, JOHN GUY. "The Functions of the Business Manager in Controlling a School Budget." *Proceedings, 1936*. National Association of Public School Business Officials. Pittsburgh: the Association (Sec.: H. W. Cramblet, Board of Education), 1936. p. 138-42.
242. FOWLKES, JOHN GUY. "The Preparation of the School Budget." *American School Board Journal* 90: 19-20, 73; June 1935.
243. HOLST, JOHN H. "The School Budget and Principles of Budget Making." *American School Board Journal* 93: 14; August 1936.
244. JENKINS, H. E. "Tyler Balances the School Budget." *American School Board Journal* 91: 40-41; October 1935.
245. KEISTER, B. V. "A Device for the Improvement of Budget Making Procedure." *American School Board Journal* 90: 53; May 1935.
246. MCCARTHY, LAWRENCE L. *Budgetary Procedure in Virginia Schools*. Master's thesis. Nashville, Tenn.: George Peabody College for Teachers, 1935.

247. MICHIGAN EDUCATION ASSOCIATION. *Some Variables in Comparative Public School Cost Accounting*. Bulletin No. 12. Lansing: the Association, 1930. 23 p.
248. NEW YORK STATE DEPARTMENT OF EDUCATION, FINANCE DIVISION. *School Accounting Documents for the Guidance of Boards of Education*. University of the State of New York Bulletin No. 1094. New York: the Department, 1936. 38 p.
249. PETERSON, B. H. *Public Hearings on School Budgets in the United States*. Doctor's thesis. Berkeley: University of California, 1936.
250. PETERSON, B. H. "Public Hearings on School Budgets in the United States." *American School Board Journal* 94: 47-48; May 1937.
251. REUSSER, WALTER C. "Better Budgets." *Nation's Schools* 16: 35-36; November 1935.
252. REUSSER, WALTER C., and HAMILTON, R. R. "Legal Phases of School Budgetary Procedure." *Reconstructing Education Through Research*. Official Report of the 1936 Meeting. Washington, D. C.: American Educational Research Association, a department of the National Education Association, 1936. p. 88-95.
253. ROSENSTENGEL, W. E. "Do You Have an Informed Board?" *School Executive* 55: 264-65; March 1936.
254. SEYFRIED, J. E. "Public School Budgetary Procedure." *School Executive* 55: 348, 354; May 1936.
255. SKINNER, LEW T. "Accrual Accounting as a Device for Budget Control." *Proceedings, 1936. National Association of Public School Business Officials*. Pittsburgh: the Association (Sec.: H. W. Cramblet, Board of Education), 1936. p. 305-308.
256. SLATER, C. P. "Problems of Business Management of the Schools." *American School Board Journal* 94: 29-31; February 1937.
257. SPINNING, JAMES M., and AKERLY, HAROLD E. "Geared to the Intelligent Lay Mind." *Nation's Schools* 17: 27-29; June 1936.
258. TOLLE, VERNON OTTIS. *Budgetary Procedure in the Municipal and Other Independent School Units of New Mexico*. Doctor's thesis. Berkeley: University of California, 1937.
259. WELLER, GERALD M. "Standards for Determining the Soundness of School-Budgetary Procedures." *American School Board Journal* 93: 48; July 1936.

Chapter V. Accounting: Financial and Property

260. AKERLY, HAROLD E. "Needed Improvement in School Business Administration." *American School Board Journal* 91: 15-16, 81; November 1935.
261. BALDWIN, HARRY G. "Why an Appraisal of School Property?" *American School Board Journal* 90: 29-30, 72; April 1935.
262. BRYAN, MARY DEGARMO. *The School Cafeteria*. New York: F. S. Crofts and Co., 1936. 726 p.
263. CAMMACK, JAMES W., JR. *Protecting Public School Funds in Kentucky*. Bulletin of the Bureau of School Service, Vol. 7, No. 4. Lexington: University of Kentucky, 1935. 216 p.
264. CAMPBELL, RAYMOND GUY. *State Supervision and Regulation of Budgetary Procedure in the Public School Systems*. Contributions to Education, No. 637. New York: Teachers College, Columbia University, 1935. 111 p.
265. CHAMBERS, FREDERICK D. "The Auditing of Public School Funds." *School Management* 6: 56-57; October 1936.
266. DE YOUNG, CHRIS A. *Budgeting in Public Schools*. Garden City, N. Y.: Doubleday, Doran and Co., 1936. 610 p.
267. ENGELHARDT, N. L., and ENGELHARDT, FRED. *Survey Manual for the Business Administration in Public School Systems*. New York: Teachers College, Columbia University, 1936. 156 p.
268. FARNAM, MARY. "Twelve School Lunchrooms and How They Grew." *Nation's Schools* 16: 54-59; December 1935.
269. FLORIDA SCHOOL CODE COMMITTEE. *Report*. Tallahassee: the Committee, 1937. 190 p.
270. GREGG, HELEN F. "Business Methods in the Pittsburgh School Cafeterias." *American School and University*, 1935. New York: American School Publishing Corp., 1935. p. 310-12.
271. HIBBERT, R. W. "School-Supplies Management." *American School Board Journal* 91: 28-30, 75; October 1935.

272. IDELL, ALBERT E. "Controlling Food Costs in Schools." *Nation's Schools* 14: 62, 64, 66, 82; August 1934.
273. MOREY, LLOYD. *Fitting the Accounting System to the Plan of Reporting Recommended by the National Committee on Standard Reports*. Financial Advisory Bulletin 6, Washington, D. C.: American Council on Education, 1936. 14 p.
274. NATIONAL ASSOCIATION OF PUBLIC SCHOOL BUSINESS OFFICIALS, COMMITTEE ON SUPPLY RESEARCH. "Thirty-Six Principles for the Selection, Purchase, and Management of School Supplies and Equipment." *American School Board Journal* 95: 39; July 1937.
275. NATIONAL COMMITTEE ON STANDARD REPORTS FOR INSTITUTIONS OF HIGHER EDUCATION. *Financial Reports for Colleges and Universities*. Chicago: University of Chicago Press, 1935. 285 p.
276. NEW YORK STATE EDUCATION DEPARTMENT, FINANCE DIVISION. *School Accounting Documents for the Guidance of Boards of Education*. University of the State of New York Bulletin No. 1094. Albany: the Department, 1936. 38 p.
277. "Pointers on Making up an Effective Annual Report." *School Management* 6: 106, 113; December 1936.
278. QUAST, FLORENCE, and ALCOTT, KATHLEEN. "A Simple System of Bookkeeping for Use in School Lunch Rooms." *Practical Home Economics* 12: 145-46; May 1934.
279. SCHUMANN, DOROTHY E. "The High School Cafeteria as a Self-Supporting Unit." *Nation's Schools* 13: 51-55; January 1934.
280. THEISS, EDWIN L. "Accounting and Budgeting." *Accounting Review* 10: 156-61; June 1935.
281. WELLER, GERALD M. "Measuring the Efficiency of the Business Department of a School System." *American School Board Journal* 92: 31-32; April 1936.

Chapter VI. Educational Costs and Their Analysis

282. ARKANSAS STATE DEPARTMENT OF EDUCATION. *Study of Local School Units in Arkansas*. Little Rock: the Department, 1937. 214 p. (Prepared in cooperation with the U. S. Office of Education.)
283. BLOSE, DAVID T., and DEFFENBAUGH, W. S. "Statistics of State School Systems, 1933-34." *Biennial Survey of Education in the United States: 1932-34*. U. S. Dept. of the Interior, Office of Education, Bulletin, 1935, No. 2. Washington, D. C.: Government Printing Office, 1937. Chapter 2, 111 p.
284. BURKE, ARVID J. *Urbanization and Public School Costs in New York State—II*. Circular No. 15. Albany, N. Y.: New York State Teachers Association, 1937. 9 p. (Mimeo.)
285. CALIFORNIA STATE DEPARTMENT OF EDUCATION. *Study of Local School Units in California*. Sacramento: the Department, 1937. 137 p. (Prepared in cooperation with the U. S. Office of Education.)
286. COMSTOCK, LULA MAE. *Per Capita Costs in City Schools, 1935-36*. U. S. Dept. of the Interior, Office of Education, Pamphlet No. 70. Washington, D. C.: Government Printing Office, 1937. 23 p.
287. FLORIDA SCHOOL CODE COMMITTEE. *Report*. Tallahassee: the Committee, 1937. 190 p.
288. GAUMNITZ, WALTER H. "Small Schools—Large Costs." *School Life* 20: 232-33; June 1935.
289. GIFFORD, NATHAN. *A Study of the Costs of Public Schools of Jefferson County, New York, Maintaining a Secondary Department*. Master's thesis. Syracuse, New York: Syracuse University, 1934.
290. GOOCH, WILBUR I. *Junior High School Costs*. Contributions to Education, No. 604. New York: Teachers College, Columbia University, 1934. 160 p.
291. HART, CONSTANCE. "Adequate School Luncheons at Low Costs." *Nation's Schools* 13: 62, 64, 66, 68; June 1934.
292. HERLIHY, LESTER B. "Urban and Rural School Expenditures." *School Life* 21: 272; June 1936.
293. HOLY, T. C. *Comparison of Costs Per Pupil in Average Daily Attendance in Ohio City and Exempted Village School Districts for 1929-30 and 1934-35*. Columbus: Bureau of Research, Ohio State University, 1936. 21 p. (Mimeo.)
294. ILLINOIS STATE DEPARTMENT OF PUBLIC INSTRUCTION. *Study of Local School Units in Illinois*. Springfield: the Department, 1937. 158 p. (Prepared in cooperation with the U. S. Office of Education.)

295. KENTUCKY STATE DEPARTMENT OF EDUCATION. *A Study of Local School Units in Kentucky*. Frankfort: the Department, 1937. 126 p. (Prepared in cooperation with the U. S. Office of Education.)
296. NORTH CAROLINA STATE DEPARTMENT OF PUBLIC INSTRUCTION. *Study of Local School Units in North Carolina*. Raleigh: the Department, 1937. 191 p. (Prepared in cooperation with the U. S. Office of Education.)
297. OHIO STATE DEPARTMENT OF EDUCATION. *Study of Local School Units in Ohio*. Columbus: the Department, 1937. 271 p. (Prepared by T. C. Holy and John A. McKnight in cooperation with the U. S. Office of Education.)
298. POWELL, ORRIN E. *Educational Returns at Varying Expenditure Levels*. Contributions to Education, No. 573. New York: Teachers College, Columbia University, 1934. 54 p.
299. SOPER, WAYNE W. *Trends in Public School Costs in New York State*. Albany, N. Y.: State Education Department, 1936. 62 p. (Mimeo.)
300. TENNESSEE STATE DEPARTMENT OF EDUCATION. *A Study of Local School Units in Tennessee*. Nashville: the Department, 1937. 206 p. (Prepared in cooperation with the U. S. Office of Education.)
301. THOMPSON, ROGER M. *Per Pupil Expenditures for Textbooks and Supplies*. Research Letter 4, Series 1936-37. Hartford, Conn.: State Department of Education. 21 p. (Mimeo.)
302. UTAH COMMITTEE TO STUDY OPERATION OF STATE GOVERNMENT. *School Finance Study and Study of Consolidation of Utah School Districts*. Salt Lake City: the Committee, 1936. 179 p.
303. WISCONSIN TEACHERS ASSOCIATION. *Our Small Enrollment Rural Schools*. Madison, Wis.: the Association, 1935. 48 p.

Chapter VII. Financial Reporting

304. AKERLY, HAROLD E. "The School Budget as Effective Publicity." *National Municipal Review* 26: 582-84, 589; December 1937.
305. ALEXANDER, CARTER. "Public Relations." *Review of Educational Research* 2: 113, 168-69; April 1932.
306. ALEXANDER, CARTER, and THEISEN, W. W. *Publicity Campaigns for Better School Support*. Yonkers-on-Hudson, N. Y.: World Book Co., 1921. 164 p.
307. ALEXANDER, CARTER. *School Statistics and Publicity*. New York: Silver, Burdett and Co., 1919. 332 p.
308. CLARK, ZENAS READ. *The Recognition of Merit in Superintendents' Reports to the Public*. Contributions to Education, No. 471. New York: Teachers College, Columbia University, 1931. 123 p.
309. CUBBERLEY, ELLWOOD P. *Public School Administration*. Boston: Houghton Mifflin Co., 1916. 479 p.
310. DE YOUNG, CHRIS A. *Budgeting in Public Schools*. Garden City, N. Y.: Doubleday, Doran and Co., 1936. 610 p.
311. ENGELHARDT, FRED. *Public School Organization and Administration*. Boston: Ginn and Co., 1931. 595 p.
312. ENGELHARDT, N. L., and ENGELHARDT, FRED. *Survey Manual for the Business Administration in Public School Systems*. New York: Teachers College, Columbia University, 1936. 156 p.
313. FARLEY, BELMONT MERCER. *School Publicity*. Stanford University, Calif.: Stanford University Press, 1934. 118 p.
314. FARLEY, BELMONT MERCER. *What To Tell the People About the Public Schools*. Contributions to Education, No. 355. New York: Teachers College, Columbia University, 1929. 136 p.
315. FORD, HERBERT L. "Small Schools Need Them, Too." *Nation's Schools* 18: 20; September 1936.
316. HANUS, PAUL H. *School Administration and School Reports*. Boston: Houghton Mifflin Co., 1920. 200 p.
317. HINES, HARLAN C., and JONES, ROBINSON G. *Public School Publicity*. New York: Macmillan Co., 1923. 72 p.
318. LASSWELL, HAROLD D.; CASEY, RALPH D.; and SMITH, BRUCE LENNES. *Propaganda and Promotional Activities; an Annotated Bibliography*. Minneapolis: University of Minnesota Press, 1935. 450 p.

319. LINN, HENRY H. *Safeguarding School Funds*. Contributions to Education, No. 387. New York: Teachers College, Columbia University, 1929. 187 p.
320. LOS ANGELES PUBLIC SCHOOLS. *Financial Data, Los Angeles City School Districts, 1937-38*. Los Angeles: Board of Education, 1937. 28 p.
321. LOS ANGELES PUBLIC SCHOOLS. *Tentative Budget, 1937-38*. Los Angeles: Board of Education, 1937. 19 p.
322. LOS ANGELES PUBLIC SCHOOLS. *Your Children and Their Schools*. Informal Report, 1936-37. Los Angeles: Board of Education, 1937. 159 p.
323. MICHIGAN EDUCATION ASSOCIATION. *Some Variables in Comparative Public School Cost Accounting*. Bulletin No. 12. Lansing: the Association, 1930. 23 p.
324. MILLER, CLYDE R., and CHARLES, FRED. *Publicity and the Public School*. Boston: Houghton Mifflin Co., 1924. 179 p.
325. MILWAUKEE PUBLIC SCHOOLS. *Financing the Schools*. Seventy-Fifth Annual Report. Milwaukee, Wis.: Board of Education, 1934. 44 p.
326. MOE, GUSTAVE A. "Budgeting and Accounting for Local School Districts in New York State." *Proceedings, 1937*. National Association of Public School Business Officials. Pittsburgh: the Association (Sec.: H. W. Cramblet, Board of Education), 1937. p. 200-14.
327. MOEHLMAN, ARTHUR B. *Public School Relations*. Chicago: Rand McNally and Co., 1927. 262 p.
328. MOEHLMAN, ARTHUR B. *Social Interpretation*. New York: D. Appleton-Century Co., 1938. 485 p.
329. NATIONAL ASSOCIATION OF PUBLIC SCHOOL BUSINESS OFFICIALS, COMMITTEE ON PUPIL-COST ACCOUNTING RESEARCH. *Public School Pupil-Cost Accounting*. Bulletin No. 3. Pittsburgh: the Association (Sec.: H. W. Cramblet, Board of Education), 1933. 85 p.
330. NATIONAL EDUCATION ASSOCIATION, DEPARTMENT OF SUPERINTENDENCE. *The Improvement of Education: Its Interpretation for Democracy*. Fifteenth Yearbook. Washington, D. C.: the Department, 1937. 328 p.
331. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. "Efforts of the States To Support Education." *Research Bulletin* 14: 101-96; May 1936.
332. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. "Federal Support for Education." *Research Bulletin* 15: 153-84; September 1937.
333. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. "Financing Public Education." *Research Bulletin* 15: 1-56; January 1937.
334. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. "School Records and Reports." *Research Bulletin* 5: 225-346; November 1927.
335. NEALE, MERVIN GORDON. *School Reports as a Means of Securing Additional Support for Education in American Cities*. Columbia: Missouri Book Co., 1921. 137 p.
336. NEW YORK CITY BOARD OF EDUCATION. *All the Children*. Thirty-Seventh Annual Report. New York: the Board, 1935. 133 p.
337. NEW YORK CITY BOARD OF EDUCATION. *All the Children*. Thirty-Eighth Annual Report. New York: the Board, 1936. 133 p.
338. NEW YORK STATE DEPARTMENT OF EDUCATION, FINANCE DIVISION. *School Accounting Documents for the Guidance of Boards of Education*. University of the State of New York Bulletin No. 1094. Albany: the Department, 1936. 38 p.
339. PETERSON, B. H. *Public Hearings on School Budgets in the United States*. Doctor's thesis. Berkeley: University of California, 1936.
340. PETERSON, B. H. "Public Hearings on School Budgets in the United States." *American School Board Journal* 94: 47-48; May 1937.
341. REYNOLDS, ROLLO GEORGE. *Newspaper Publicity for the Public Schools*. New York: the Author, 1922. 125 p.
342. ROCHESTER PUBLIC SCHOOLS. *Budget and Superintendent's Foreword*. Rochester, N. Y.: Board of Education, 1938. 24 p.
343. SIMPSON, ALFRED D., chairman. "Finance and Business Administration." *Review of Educational Research* 5: 121-84; April 1935.
344. SIMS, VERNER MARTIN. "Factors Influencing Attitude Toward the TVA." *Journal of Abnormal and Social Psychology* 33: 34-56; January 1938.
345. SNEDDEN, DAVID S., and ALLEN, W. H. *School Reports and School Efficiency*. New York: Macmillan Co., 1908. 183 p.
346. SPINNING, JAMES M., and AKERLY, HAROLD E. "Geared to the Intelligent Lay Mind." *Nation's Schools* 17: 27-29; June 1936.
347. STRAYER, GEORGE D., and THORNDIKE, EDWARD L. *Educational Administration*. New York: Macmillan Co., 1913. 391 p.

348. SWING, G. O., and HOUSE, C. R., JR. "A School Bond Issue Campaign." *School Executive* 55: 260-61, 271; March 1936.

Chapter VIII. Salary Scheduling

349. BARUCH, ISMAR. *Administration of a Classification Plan Thru Periodic Audit*. Pamphlet No. 5. Chicago: Civil Service Assembly, 1936.
350. COMMISSION OF INQUIRY ON PUBLIC SERVICE PERSONNEL. *Better Government Personnel*. New York: McGraw-Hill Book Co., 1935. 182 p.
351. COMMISSION OF INQUIRY ON PUBLIC SERVICE PERSONNEL. *Problems of the American Public Service*. Monographs No. 7-11. New York: McGraw-Hill Book Co., 1935. 433 p.
352. ELSBREE, WILLARD S. *A Report on the Salaries of Teachers and Other Employees in the Greenwich Public Schools*. Greenwich, Conn.: Board of Education, 1937. 63 p. (Mimeo.)
353. ELSBREE, WILLARD S. *A Report on the Salaries of Teachers and Other Employees in the New Rochelle Public Schools*. New Rochelle, N. Y.: Board of Education, 1936. 91 p. (Mimeo.)
354. ELSBREE, WILLARD S. "A Sane Salary Schedule for Teachers." *School Executive* 57: 152-53, 184; December 1937.
355. ELSBREE, WILLARD S. "Some Current Issues in the Scheduling of Teachers' Salaries." *Teachers College Record* 39: 99-106; November 1937.
356. ELSBREE, WILLARD S. "Stepping up the Salary Ladder." *Nation's Schools* 19: 27-28; June 1937.
357. FELDMAN, HERMAN. *A Personnel Program for the Federal Civil Service*. A Report Transmitted by the Director of the Personnel Classification Board. House Document No. 773, 71st Congress, 3rd Session, Washington, D. C.: Government Printing Office, 1931. 289 p.
358. FOSTER, RICHARD R. "The Economic Position of Teachers." *The Application of Research Findings to Current Educational Practices*. Official Report of 1935 Meeting. Washington, D. C.: American Educational Research Association, a department of the National Education Association, 1935. p. 59-65.
359. GREER, SARAH. "Classification and Salary Standardization." *A Bibliography of Civil Service and Personnel Administration*. Commission of Inquiry on Public Service Personnel Monographs, No. 1. New York: McGraw-Hill Book Co., 1935. Chapter 3, p. 39-47.
360. HERBERT, CARL P. "Saint Paul's Fair Wage System." *National Municipal Review* 21: 589-91; October 1932.
361. LEAGUE OF VIRGINIA MUNICIPALITIES. *Salaries and Living Costs in the Municipal Service in Virginia*. Report No. 120. Richmond, 1933. (Mimeo.)
362. MICHIGAN. *Report of the Civil Service Study Commission*. Lansing, Mich., 1936. 90 p.
363. MOSHER, WILLIAM E., and KINGSLEY, J. DONALD. *Public Personnel Administration*. New York: Harper and Brothers, 1936. 588 p.
364. NEW YORK STATE EDUCATION DEPARTMENT. *Your Schools*. New Rochelle, N. Y.: Board of Education, 1936. 207 p.
365. NEW YORK STATE TEACHERS ASSOCIATION. *The Facts About Public School Teachers Salaries in New York State, 1930-1936*. Circular No. 3. Albany: the Association, 1937. 6 p. (Mimeo.)
366. PRESIDENT'S COMMITTEE ON ADMINISTRATIVE MANAGEMENT. *Administrative Management in the Government of the United States*. Washington, D. C.: Government Printing Office, 1937. 47 p.
367. PRESIDENT'S COMMITTEE ON ADMINISTRATIVE MANAGEMENT. *Personnel Administration in the Federal Service*. Studies on Administrative Management in the Government of the United States, No. 1. Washington, D. C.: Government Printing Office, 1937. 75 p.
368. TENNESSEE VALLEY AUTHORITY. *Regulations for Classification, Salary Schedule and Salary Increases for Employees of the Tennessee Valley Authority*. Knoxville, Tenn.: the Authority, 1937. 14 p. (Mimeo.)
369. U. S. PERSONNEL CLASSIFICATION BOARD. *Closing Report on Wage and Personnel Survey*. House Document No. 771, 71st Congress, 3rd Session. Washington, D. C.: Government Printing Office, 1931. 404 p.

370. U. S. PERSONNEL CLASSIFICATION BOARD. *Report of Wage and Personnel Survey*. House Document No. 602, 70th Congress, 2nd Session. Washington, D. C.: Government Printing Office, 1929. 511 p.
371. WHITE, LEONARD D. *Government Career Service*. University Studies in Public Administration, Vol. 3. Chicago: University of Chicago Press, 1935. 99 p.
372. WILMERDING, LUDWIG. *Government by Merit*. Commission of Inquiry on Public Service Personnel Monographs, No. 12. New York: McGraw-Hill Book Co., 1935. 294 p.

Chapter IX. Insurance, Purchasing, and Stores Management

373. BALDWIN, HARRY G. "Why an Appraisal of School Property?" *American School Board Journal* 90: 29-30, 72; April 1935.
374. BEHRENS, RICHARD H. "Program of Testing School Supplies." *American School Board Journal* 93: 43; July 1936.
375. BELDING, ANSON W. "Press Forward with New Books." *Journal of Education* 120: 60-61; February 1, 1937.
376. BROWN, EDWIN J., and BYALL, RUSSELL D. *A "Consumers Research" in School Supplies*. Bulletin of Information, Vol. 16, No. 9. Emporia: Kansas State Teachers College, 1936. 44 p.
377. BURKHARDT, ALLEN P. "Practical Insurance Economies." *American School Board Journal* 94: 52-53; March 1937.
378. CADDEY, CARL G. "Tacoma's Five-Year Plan." *Nation's Schools* 20: 55-56; September 1937.
379. CHENEY, RAY E. "The Selection and Purchase of School Equipment." *American School Board Journal* 93: 65-66; July 1936.
380. COUNCELL, W. M. "System in Handling Supplies." *Nation's Schools* 19: 51-53; April 1937.
381. HIBBERT, R. W. "Improved Methods of Selecting Equipment and Supplies." *American School Board Journal* 95: 44-46, 100-101, September; 42-43, October; 30-31, November 1937.
382. "How Ottawa Schools Purchase Coal." *American School Board Journal* 95: 52, 93; September 1937.
383. JENKINS, H. E. "Saving on School Fire Insurance." *School Executive* 57: 32-33; September 1937.
384. JOYNER, S. C. "Distributing School Insurance to Local Agencies." *American School Board Journal* 95: 50-51; September 1937.
385. LINN, H. H. "The Janitor Supply Racket." *School Executive* 55: 108-10, 115, 119; November 1935.
386. MCCLINTON, J. W. "Problems of School Buying in Intermediate and Smaller School Districts." *American School Board Journal* 95: 36-37; November 1937.
387. MCCULLOUGH, A. M. "Methods of Purchasing Coal in Small Communities." *American School Board Journal* 94: 36, April; 31-32, May 1937.
388. MARSHALL, C. D. "Stop, Look, But Don't Listen." *American School Board Journal* 95: 35-37, 94; July 1937.
389. NANCARROW, J. E. "Getting Your Money's Worth in School Jewelry." *American School Board Journal* 95: 56, 94; September 1937.
390. REAGLE, FRED P. "Buying to Fit the Budget." *Nation's Schools* 18: 43-47; August 1936.
391. ROGERS, DON C. "How Chicago Practices Economy in Textbooks." *American School Board Journal* 95: 25-27; July 1937.
392. "A School-Insurance Program." *American School Board Journal* 94: 78; January 1937.
393. "Survey First for Insurance." *Nation's Schools* 19: 62; April 1937.
394. "Thirty-Six Principles for the Selection, Purchase, and Management of School Supplies and Equipment." *American School Board Journal* 95: 39; July 1937.
395. TOLMIE, HUGH D. "Stokers Economize for Rockford Schools." *American School Board Journal* 95: 34-36, 82; August 1937.
396. WERNER, J. C. "State Fire-Insurance Fund Provisions." *American School Board Journal* 90: 22-23; April 1935.

397. WERNER, J. C. "State Laws on School Insurance." *Nation's Schools* 15: 33-34; February 1935.
398. YOUNG, C. P. "Co-operative Buying for Schools." *American School Board Journal* 93: 28, 71; July 1936.

Chapter X. The Support of Education: Federal, State, and Local Funding

399. AKERLY, HAROLD E. "Has State Aid Actually Equalized Educational Opportunity?" *Nation's Schools* 17: 16-17; January 1936.
400. ALMACK, JOHN C. "Education for Adequate School Support." *Annals of the American Academy of Political and Social Science* 182: 101-15; November 1935.
401. "Appropriations of the National Youth Administration." *School and Society* 46: 363; September 18, 1937.
402. ARIZONA STATE DEPARTMENT OF EDUCATION. *A Study of Local School Attendance Areas and Administrative Units in Arizona*. Phoenix: the Department, 1936. 185 p. (Mimeo.) (Prepared in cooperation with the U. S. Office of Education.)
403. ARKANSAS STATE DEPARTMENT OF EDUCATION. *Study of Local School Units in Arkansas*. Little Rock: the Department, 1937. 214 p. (Prepared in cooperation with the U. S. Office of Education.)
404. BLAKELY, PAUL L. "Federal Aid for All School Children." *America* 54: 522-23; March 7, 1936.
405. BOLTON, F. E. "Relation of Federal Government to Education." *School and Society* 43: 105-11; January 25, 1936.
406. BURKE, ARVID J. "State Aid for Reorganization." *Nation's Schools* 19: 35-36; April 1937.
407. CALIFORNIA STATE DEPARTMENT OF EDUCATION. *Study of Local School Units in California*. Sacramento: the Department, 1937. 137 p. (Prepared in cooperation with the U. S. Office of Education.)
408. CHAMBERS, M. M. "Federal Aid on the Horizon." *Nation's Schools* 19: 29-30; January 1937.
409. CHAMBERS, M. M. "New Laws on Finance." *Nation's Schools* 20: 29-31; August 1937.
410. CHAMBERS, M. M. "Progress in State School Finance." *Nation's Schools* 16: 37-38; November 1935.
411. CHAMBERS, M. M. "School Finance Legislation of 1935." *Nation's Schools* 16: 23-25; August 1935.
412. CHISM, LESLIE L. "Can the States Support an Average Program of Education." *School and Society* 42: 751-52; November 30, 1935.
413. CHISM, LESLIE L. *The Economic Ability of the States to Finance Public Schools*. Contributions to Education, No. 669. New York: Teachers College, Columbia University, 1936. 169 p.
414. CHISM, LESLIE L. "The Effect of the Retail Sales Tax on the Relative Ability of the States to Support Education." *Journal of Educational Research* 30: 44-46; September 1936.
415. CHISM, LESLIE L. "Relative Ability of the States to Finance Education." *Secondary Education* 4: 277-79; November 1935. Washington, D. C.: Department of Secondary Education, National Education Association.
416. CORNELL, FRANCIS G. *A Measure of Taxpaying Ability of Local School Administrative Units*. Contributions to Education, No. 698. New York: Teachers College, Columbia University, 1936. 114 p.
417. COSTIGAN, E. P. "Education and the General Welfare." *Proceedings*, 1935. Washington, D. C.: National Education Association, 1935. p. 73-83.
418. COVERT, TIMON. *State Provisions for Equalizing the Cost of Public Education*. U. S. Dept. of the Interior, Office of Education, Bulletin, 1936, No. 4. Washington, D. C.: Government Printing Office, 1936. 49 p.
419. "Current Trends and Events in Negro Education." *Journal of Negro Education* 6: 101-28; January 1937.
420. CYR, FRANK W.; BURKE, ARVID J.; and MORT, PAUL R. *Paying for Our Public Schools*. Scranton, Pa.: International Textbook Co., 1938. 197 p.
421. DAVENPORT, WALTER. "With Labor Thrown In." *Collier's* 100: 16-17; November 27, 1937.

422. DAWSON, HOWARD A. "Financing Our Public Schools." *Journal of the American Association of University Women* 30: 72-77; January 1937.
423. "Educational Legislation in Minnesota." *School and Society* 46: 363-64; September 18, 1937.
424. EDWARDS, BENJAMIN. "Federal Control of Education." *High Points* 17: 33-37; June 1935. New York: Board of Education.
425. EELLS, WALTER CROSBY. "California Argument for Federal Aid." *Nation's Schools* 16: 35-36; July 1935.
426. "Federal Funds for Vocational Education." *School and Society* 46: 394; September 25, 1937.
427. "Financial Outlook for Education." *School Executives Magazine* 54: 323-25; July 1935.
428. "George-Deen Vocational Education Law." *School and Society* 44: 296; September 5, 1936.
429. GIVENS, WILLARD E. "Equal Opportunity for Children." *Journal of the National Education Association* 25: 169; September 1936.
430. HALL, SIDNEY B. "Report of Legislative Commission." *Proceedings, 1935*. Washington, D. C.: National Education Association, 1935. p. 168-72.
431. HAMLIN, H. M. "Twenty Years of Federal Aid." *School Review* 45: 257-65; April 1937.
432. HENRY, DAVID D. "Federal Aid, Again." *Nation's Schools* 22: 19-20; August 1937.
433. HUDNALL, J. MAYES. "The New School Plant of Delaware." *School Executive* 55: 257-59, 268; March 1936.
434. ILLINOIS DEPARTMENT OF PUBLIC INSTRUCTION. *Study of Local School Units in Illinois*. Springfield: the Department, 1937. 158 p. (Prepared in cooperation with the U. S. Office of Education.)
435. JUDD, CHARLES H., and OTHERS. "Three Views on Federal Aid to Schools." *Nation's Schools* 17: 25; March 1936.
436. KENTUCKY STATE DEPARTMENT OF EDUCATION. *Study of Local School Units in Kentucky*. Frankfort: the Department, 1937. 126 p. (Prepared in cooperation with the U. S. Office of Education.)
437. LANCASTER, LANE W. *Government in Rural America*. New York: D. Van Nostrand Co., 1937. 416 p.
438. LEE, CHARLES A. "The Big Red Schoolhouse." *Nation's Schools* 19: 31-32; June 1937.
439. LUDEMAN, W. W. "Progress in Equalizing School Costs." *American School Board Journal* 94: 18, 96; March 1937.
440. LUNDEEN, ERNEST. "Federal Aid to Meet Emergency Education." *School and Society* 42: 177-86; August 10, 1935.
441. MCNEELY, J. H. "New State Policies." *Journal of Higher Education* 7: 363-67; October 1936.
442. MCPHERSON, W. B. "Let Us Not Be Deceived." *Nation's Schools* 15: 27-28; July 1935.
443. MOEHLMAN, ARTHUR B. "Credit—A Stabilizer." *Nation's Schools* 17: 13-14; May 1936.
444. MORT, PAUL R. "Federal Support for Public Education." *Teachers College Record* 37: 588-602; April 1936.
445. MORT, PAUL R. *Federal Support for Public Education*. New York: Teachers College, Columbia University, 1936. 334 p.
446. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. "The Efforts of the States To Support Education as Related to Adequacy and Ability." *Research Bulletin* 13: 101-64; May 1936.
447. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. "Federal Support for Education." *Research Bulletin* 15: 153-83; September 1937.
448. NATIONAL EDUCATION ASSOCIATION, RESEARCH DIVISION. "Financing Public Education." *Research Bulletin* 15: 1-88; January 1937.
449. NEW YORK STATE DEPARTMENT OF EDUCATION, FINANCE DIVISION. *School Accounting Documents for the Guidance of Boards of Education*. University of the State of New York Bulletin No. 1094. Albany: the Department, 1936. 38 p.
450. NEWCOMER, MABEL. *An Index of the Taxpaying Ability of State and Local Governments*. New York: Teachers College, Columbia University, 1935. 85 p.
451. NORTH CAROLINA STATE DEPARTMENT OF PUBLIC INSTRUCTION. *Study of Local School Units in North Carolina*. Raleigh: the Department, 1937. 191 p. (Prepared in cooperation with the U. S. Office of Education.)

452. NORTON, JOHN K., and NORTON, MARGARET ALLTUCKER. *Wealth, Children and Education*. New York: Teachers College, Columbia University, 1937. 100 p.
453. OHIO STATE DEPARTMENT OF EDUCATION. *Study of Local School Units in Ohio*. Columbus: the Department, 1937. 271 p. (Prepared by T. C. Holy and John A. McKnight in cooperation with the U. S. Office of Education.)
454. OKLAHOMA STATE DEPARTMENT OF EDUCATION. *Study of Local School Units in Oklahoma*. Oklahoma City: the Department, 1937. 392 p. (Prepared in cooperation with the U. S. Office of Education.)
455. OUTLAND, GEORGE E., and MARTIN, CHARLES K. "Transiency and Federal Aid to Education." *School and Society* 46: 126-28; July 24, 1937.
456. OVERN, A. V. "Statewide Pay-as-You-Go Policy for Local Building Costs." *Nation's Schools* 16: 27-28; August 1935.
457. PAULY, FRANK R. "Financing the Schools of Oklahoma." *School Executive* 55: 212-14; February 1936.
458. PENNSYLVANIA STATE DEPARTMENT OF PUBLIC INSTRUCTION. *Study of Local School Units in Pennsylvania*. Harrisburg: the Department, 1937. 150 p. (Prepared in cooperation with the U. S. Office of Education.)
459. POLAKOV, WALTER N. "Billions Needed for Building." *Nation's Schools* 18: 17-18; July 1936.
460. "President Roosevelt's Message on the Congressional Appropriation for Vocational Education." *School and Society* 46: 249-51; August 21, 1937.
461. "Program for Federal Support of Education." *Elementary School Journal* 37: 81-88; October 1936.
462. "Public Support for Religious Schools." *School and Society* 43: 193-94; February 8, 1936.
463. PULLIAM, ROSCOE. "Economic Depletion and School Finance." *Educational Administration and Supervision* 22: 105-12; February 1936.
464. REUSSER, WALTER C. "Permanent School Funds in Wyoming." *School and Society* 46: 247-48; August 21, 1937.
465. RICHMOND, JAMES H. "Responsibility of Government for the Support of Schools." *Nation's Schools* 15: 21-23; March 1935.
466. SEARS, JESSE B. "Our Theory of Public School Support." *School and Society* 43: 73-84; January 18, 1936.
467. "State Support of High Schools Should Be Provided." *Wisconsin Journal of Education* 69: 231, 233; January 1937.
468. TAX POLICY LEAGUE. *How Should Business Be Taxed?* New York: the League, 1937. 167 p.
469. TAX POLICY LEAGUE. "State Tax Legislation in 1937." *Tax Policy* 4: 1-15; July 1937.
470. TAX POLICY LEAGUE. "State Tax Yield Percentage: 1937." *Tax Policy* 5: 123; January 1938.
471. TAX POLICY LEAGUE. "State Tax Yield Statistics: 1937." *Tax Policy* 5: 1-53; November-December 1937.
472. TENNESSEE STATE DEPARTMENT OF EDUCATION. *Study of Local School Units in Tennessee*. Nashville: the Department, 1937. 206 p. (Prepared in cooperation with the U. S. Office of Education.)
473. THOMPSON, C. H. "Harrison-Black-Fletcher Bill Makes Its Debut." *Journal of Negro Education* 6: 129-33; April 1937.
474. TRENT, W. W. "Educational Advances in West Virginia." *Nation's Schools* 16: 22-25; July 1935.
475. TWENTIETH CENTURY FUND, COMMITTEE ON TAXATION. *Facing the Tax Problem*. New York: the Fund, 1937. 606 p.
476. VILES, N. E. "Business of State Public School Administration." *American School Board Journal* 91: 37-38, 73; December 1935.
477. WELLER, GERALD M. "Answer to the Housing Problem." *Nation's Schools* 18: 40; October 1936.
478. WELLER, GERALD M. "Federal Aid for School Building Construction." *American School Board Journal* 91: 25-26, 81; November 1935.
479. WELLER, GERALD M. "A Plan for State Equalization of Capital Outlays for Public School Buildings." *American School Board Journal* 91: 23-24; August 1935.
480. WILKINS, EUGENE G. *Public School Tax Management in Texas*. Contributions to Education, No. 703. New York: Teachers College, Columbia University, 1937. 105 p.

Index to Vol. VIII, No. 2, April 1938

References in this Index are to the beginning of chapters and their subdivisions, and to the first allusion in running (perhaps intermittent) discussions. One should scan several pages following the one cited.

- Accounting, financial, 142; higher education institutions, 146; internal, 144; property, 144; *see also* budgeting, business administration, finance
- Appraisal of reports, 159
- Attendance units, 126
- Budgeting, 120, 133; evaluation, 134; *see also* accounting, business administration, finance, planning
- Building, financing, *see* capital outlay
- Business administration, 146; evaluation of research, 187; needed research, 187; *see also* accounting, budgeting, finance, purchasing, transportation of pupils
- Capital outlay, 122; federal support for, 179; state support for, 183; *see also* debt service, finance
- College, *see* higher education institutions
- Consolidation, 127; *see also* reorganization of districts
- Costs of education, 148; *see also* finance, unit costs
- County units, 128, 131
- Debt service, 113; *see also* capital outlay, finance
- Economies, 167; through reorganizing districts, 127; *see also* finance
- Educational Policies Commission, 128
- Equalization, *see* state support, federal support
- Evaluation, of budgets, 134; of research in business administration and finance, 187
- Federal support of education, 108, 124, 171; for parochial and private schools, 180; *see also* finance
- Finance, evaluation of research in, 187; needed research, 140, 187; protection of funds, 158, 186; reports, 154; *see also* accounting, budgeting, business administration, capital outlay, costs of education, debt service, economies, federal support of education, insurance, junior colleges, legislation, salary schedules, state support, support of education, taxation, transportation of pupils, tuition fees, unit costs
- Higher education institutions; *see* accounting
- Insurance, 167; *see also* finance
- Internal accounting; *see* accounting
- Inventories; *see* accounting, property
- Junior colleges, support, 129; *see also* finance
- Legislation, budgets, 133; school buildings, 123; taxes, 110; *see also* finance
- Local support of education, 184
- Lunchrooms, 144
- Measurement of financial ability, effort, and need, 174, 182
- Mobility of population, 173
- Needed research, 187; finance, 140; on school costs, 153
- Negro education, support of, 174, 180
- One-teacher schools, 128, 151; *see also* size of schools
- Organization, *see* school organization
- Parochial schools, support, 180
- Planning, 120; *see also* budgeting
- Population, mobility of, 173
- Protection of funds, *see* finance
- Public relations, 123, 131, 154; *see also* reports
- Purchasing, 168; *see also* business administration
- Reorganization of districts, 122, 126, 151, 181; *see also* consolidation, units, administration of
- Reports, 154; *see also* finance, public relations
- Rural education, 182
- Salary schedules, 163; government, 164; teachers', 163; *see also* finance
- School districts, 127; *see also* units, administration of
- School finance, evaluation of research, 187; needed research, 187
- School organization, 126; *see also* units, administration of
- School surveys, 146

- Size of schools, 127, 151; *see also* one-teacher schools
- State school systems, 128; *see also* state units
- State support of education, 108, 127, 130, 180; *see also* finance, state units, support of education
- State units, 131; *see also* state school systems
- Supplies, purchase and storage, 168
- Support of education, 171; *see also* federal support of education, local support of education, state support of education, taxation
- Taxation, 107, 185; *see also* finance, support of education
- Teachers' salaries, *see* salary schedules
- Textbooks, 169
- Transportation of pupils, 126, 150; *see also* business administration, finance, unit costs
- Tuition fees, 129
- Unit costs, 148, 153; *see also* costs of education, finance, transportation of pupils
- Units, administration of, *see* attendance units, consolidation, county units, reorganization of districts, school districts, school organization, size of schools, state units
- Vocational education, support of, 179

REVIEW OF EDUCATIONAL RESEARCH

Issues Published To Date

THE CURRICULUM	
Vol. I, No. 1, January, 1931. 64 pp.	1.00
TEACHER PERSONNEL	
Vol. I, No. 2, April, 1931. 96 pp.	1.00
SCHOOL ORGANIZATION	
Vol. I, No. 3, June, 1931. 84 pp.	1.00
SPECIAL METHODS IN THE ELEMENTARY SCHOOL	
Vol. I, No. 4, October, 1931. 82 pp.	1.00
PSYCHOLOGY OF THE SCHOOL SUBJECTS	
Vol. I, No. 5, December, 1931. 127 pp.	1.00
SPECIAL METHODS ON HIGH-SCHOOL LEVEL	
Vol. II, No. 1, February, 1932. 96 pp.	1.00
FINANCE AND BUSINESS ADMINISTRATION	
Vol. II, No. 2, April, 1932. 89 pp.	1.00
TESTS OF PERSONALITY AND CHARACTER	
Vol. II, No. 3, June, 1932. 88 pp.	1.00
TESTS OF INTELLIGENCE AND APTITUDE	
Vol. II, No. 4, October, 1932. 72 pp.	1.00
SCHOOL BUILDINGS, GROUNDS, EQUIPMENT, APPARATUS, AND SUPPLIES	
Vol. II, No. 5, December, 1932. 89 pp.	1.00
EDUCATIONAL TESTS AND THEIR USES	
Vol. III, No. 1, February, 1933. 80 pp.	1.00
MENTAL AND PHYSICAL DEVELOPMENT	
Vol. III, No. 2, April, 1933. 100 pp.	1.00
PUPIL PERSONNEL, GUIDANCE, AND COUNSELING	
Vol. III, No. 3, June, 1933. 95 pp.	1.00
PSYCHOLOGY OF LEARNING, GENERAL METHODS OF TEACHING, AND SUPERVISION	
Vol. III, No. 4, October, 1933. 88 pp.	1.00
LEGAL BASIS OF EDUCATION	
Vol. III, No. 5, December, 1933. 114 pp.	1.00
METHODS AND TECHNIQS OF EDUCATIONAL RESEARCH	
Vol. IV, No. 1, February, 1934. 96 pp.	1.00
THE CURRICULUM	
Vol. IV, No. 2, April, 1934. 132 pp.	1.00
TEACHER PERSONNEL	
Vol. IV, No. 3, June, 1934. 100 pp.	1.00
SCHOOL ORGANIZATION	
Vol. IV, No. 4, October, 1934. 92 pp.	1.00
PSYCHOLOGY AND METHODS IN THE HIGH SCHOOL AND COLLEGE	
Vol. IV, No. 5, December, 1934. 119 pp.	1.00
SPECIAL METHODS AND PSYCHOLOGY IN THE ELEMENTARY SCHOOL	
Vol. V, No. 1, February, 1935. 120 pp.	1.00
FINANCE AND BUSINESS ADMINISTRATION	
Vol. V, No. 2, April, 1935. 64 pp.	1.00
PSYCHOLOGICAL TESTS	
Vol. V, No. 3, June, 1935. 150 pp.	1.00
THE SCHOOL PLANT	
Vol. V, No. 4, October, 1935. 111 pp.	1.00
EDUCATIONAL TESTS AND THEIR USES	
Vol. V, No. 5, December, 1935. 99 pp.	1.00
MENTAL AND PHYSICAL DEVELOPMENT	
Vol. VI, No. 1, February, 1936. 152 pp.	1.00
PUPIL PERSONNEL, GUIDANCE, AND COUNSELING	
Vol. VI, No. 2, April, 1936. 122 pp.	1.00
PSYCHOLOGY OF LEARNING, GENERAL METHODS OF TEACHING, AND SUPERVISION	
Vol. VI, No. 3, June, 1936. 72 pp.	Out of print
HISTORY OF EDUCATION AND COMPARATIVE EDUCATION	
Vol. VI, No. 4, October, 1936. 104 pp.	1.00

REVIEW OF EDUCATIONAL RESEARCH

Issues Published To Date (Continued)

MENTAL HYGIENE AND ADJUSTMENT	
Vol. VI, No. 5, December, 1936. 120 pp.....	1.00
EDUCATIONAL SOCIOLOGY	
Vol. VII, No. 1, February, 1937. 112 pp.....	1.00
THE CURRICULUM	
Vol. VII, No. 2, April, 1937. 124 pp.....	1.00
TEACHER PERSONNEL	
Vol. VII, No. 3, June, 1937. 118 pp.....	1.00
SCHOOL ORGANIZATION	
Vol. VII, No. 4, October, 1937. 90 pp.....	1.00
SPECIAL METHODS AND PSYCHOLOGY OF THE ELEMENTARY-SCHOOL SUBJECTS	
Vol. VII, No. 5, December, 1937. 159 pp.....	1.00
PSYCHOLOGY AND METHODS IN THE HIGH SCHOOL AND COLLEGE	
Vol. VIII, No. 1, February, 1938. 102 pp.....	1.00
FINANCE AND BUSINESS ADMINISTRATION	
Vol. VIII, No. 2, April, 1938. 110 pp.....	1.00

PRACTICAL VALUES OF EDUCATIONAL RESEARCH

OFFICIAL REPORT, 1938

216 Pages

Price, \$1.50

Contains the addresses delivered at the Atlantic City meeting of the Association, February, 1938, and is the fourth Official Report published by the American Educational Research Association in separate printed form.

Deans of schools of education, librarians, and others engaged in teaching in colleges and universities will find this report valuable for textbook and supplementary reading.

REVIEW OF EDUCATIONAL RESEARCH

Official Publication of the American Educational Research Association,
a department of the National Education Association

The contents of the REVIEW are listed in the EDUCATION INDEX.

Volume VIII

December 1938

Number 5

EDUCATIONAL TESTS AND THEIR USES

Reviews the literature from July 1935 to July 1938

Prepared by the Committee:

Harry A. Greene, *Chairman*; S. A. Courtis, Fred P. Frutchey, E. F. Lindquist,
Paul V. Sangren, Douglas E. Scates, and Charles C. Weidemann, with the coopera-
tion of:

Birdean J. Morris.

TABLE OF CONTENTS

Chapter	Page
Foreword.....	495
Introduction.....	496
I. Studies of Educational Achievement.....	497
PAUL V. SANGREN, <i>Western State Teachers College, Kalamazoo, Michigan.</i>	
II. Educational Prevention, Diagnosis, and Remediation.....	513
FRED P. FRUTCHEY, <i>United States Department of Agriculture, Washington, D. C.</i>	
III. The Essay-Type Test.....	517
CHARLES C. WEIDEMANN, <i>Ohio State University, Columbus, Ohio,</i> and BIRDEAN J. MORRIS.	
IV. The Improvement of Classroom Testing.....	523
DOUGLAS E. SCATES, <i>Cincinnati Public Schools, Cincinnati, Ohio.</i>	
V. Developments in Test Scoring and Analysis.....	537
FRED P. FRUTCHEY, <i>United States Department of Agriculture, Washington, D. C.</i>	
VI. The Educational Measurement Movement in Perspective.....	542
A. Developments in Educational Measurement.....	
E. F. LINDQUIST, <i>State University of Iowa, Iowa City, Iowa.</i>	
	493

vol. 34-4, 1938 Michigan

<i>Chapter</i>	<i>Page</i>
B. Current Criticisms of Educational Measurement.....	545
S. A. COURTIS, <i>University of Michigan, Ann Arbor, Michigan.</i>	
C. Past and Present Trends in Educational Measurement.....	547
S. A. COURTIS, <i>University of Michigan, Ann Arbor, Michigan.</i>	
VII. Recent Literature on Testing.....	551
DOUGLAS E. SCATES, <i>Cincinnati Public Schools, Cincinnati, Ohio.</i>	
Bibliography.....	554
List of Members.....	571
Index.....	586
Index to Volume VIII.....	588

Copyright, 1939
 By National Education Association of the United States
 Washington, D. C.

 All Rights Reserved

FOREWORD

THIS ISSUE of the *Review of Educational Research* deals with the construction and use of tests which evidence pupil growth in abilities. The issue includes studies of these abilities as measured by tests (Chapter I), and to some extent it touches upon habits of behavior, attitudes, and interests. These are coming to be recognized more and more in the objectives of instruction, and are therefore closely related to the field of educational testing. In the main, however, tests of personality, character, attitudes, and intelligence are left to the *Review* dealing with "Psychological Tests and Their Uses," the last issue of which was in June 1938. That issue, and its bibliography, should be considered as supplementary to the present number.

The treatment in the present issue is concerned with the larger aspects of educational measurement. Testing in individual subject fields is not treated specifically; one should consult the recent numbers on "Special Methods and Psychology of the Elementary-School Subjects" (December 1937), "Psychology and Methods in the High School and College" (February 1938), and "The Curriculum" (April 1937) for measurement as related to subject fields.

One will note that many of the problems in the field of educational testing are problems of judgment. This should not be discouraging to research workers. Factual material must always fit into a matrix of human thought and value if it is to be used advantageously. The thing for research workers to feel legitimate concern about is whether they have sensed the real problems, and whether they are doing all that is within their power to attack these real problems, so that they can turn over to the practical educator facts which are as free as possible from error, and which are germane to the problems that are basic.

DOUGLAS E. SCATES,
Chairman of the Editorial Board.

INTRODUCTION

THIS *Review of Educational Research* attempts a slight change in organization from previous reports on "Educational Tests and Their Uses." This change is due partly to the fact that the contributions of the period stress somewhat different aspects of measurement, and partly to the fact that it appeared to be unnecessary to duplicate certain areas which recently have received entirely adequate treatment.

Several hundred titles representing the test literature of the period from June 1935 to June 1938 were examined, abstracted, and fitted into the tentative outline of the report. Limited research contributions in certain quarters forced modifications of the outline originally planned. Further modification was necessitated by virtue of the very complete and detailed report of "Psychological Tests and Their Uses" in the June 1938 *Review*. The inclusion of material on vocational, aptitude, and personality tests, as well as an unusually critical and complete treatment of statistical methods related to test construction, made it advisable not to duplicate these treatments in this number of the *Review*.

Notwithstanding that this report is basically a review of research it was felt that there are trends in the thinking of those most interested in the improvement of educational measurement which are not fully represented in completed research. Accordingly, and at the risk of some criticism, the Committee includes in this review certain trends and basic issues which have been expressed or observed during the period covered, but which might not be evident in the research itself.

The chairman of the Committee wishes to thank the members and all others interested in this field who by their suggestions and criticisms have aided in the development of the outline and of the report itself.

HARRY A. GREENE, *Chairman,*
Committee on Educational Tests and Their Uses.

CHAPTER I

Studies of Educational Achievement¹

PAUL V. SANGREN

Dependence upon Validity of Measurements

A NUMBER OF WRITERS rightly question the value of experimentation in which wholly or partially inadequate tests are used as measures. Orata (63) pointed out that "we cannot be progressive in our teaching and remain basically traditional in our testing." J. S. Gray (40), in a similar vein, said: "The adequacy of objective tests for evaluating hypotheses in education is obviously much inferior to that in the more basic sciences. It is more difficult to control the variables. However, a part of research training for this step is to learn the better methods of testing and their limitations. Educational research is in dire need of more objective and more adequate methods of testing our great mass of unproven theories." Payne (67) made similar remarks in regard to evaluation in higher education. In an indictment of meaningless and superficial research he said: "I have not made these remarks about experiments just to be critical. . . . I have made them primarily because we have no very accurate ways of measuring the results of the experiments. . . . If, then, we wish to advance education from the point of view of science, the greatest need of research in the field of higher education is in the field of measurement." Newland (61) blamed both college educators and research workers for the dearth of research at the college level. The former, according to Newland, cannot agree as to the function of higher education, and the latter hold too narrow a conception of measurement. Peik (69), although speaking particularly with reference to experimentation in curriculum research, stated an opinion which is also applicable to educational research in general.

The value of innovation in experimental groups was determined by initial and final measurements of status. This method of evaluation through tests depends upon the reliability and validity of the instruments of measurement. Whereas testing is scientific in theory, and experimentation is a basic approach to curricular development, this type of research is still limited in value through a lack of instruments that are wholly valid and sufficiently refined. In some important sectors tests of outcomes are yet either lacking or in a very crude state of development. Suitable tests are essential to the progress of research through measurement. . . .

Evaluation of Achievement Tests

A comparison of the New Stanford Achievement Test and the Modern School Achievement Tests was made by Woolf and Lind (97). Results showed that the Stanford Achievement Test indicated a slight superiority

¹ Bibliography for this chapter begins on page 554.

in statistical evaluation and tended to give slightly higher age and grade levels according to means obtained in a comparison of individual tests. The writers concluded with the statement that the two tests are so similar in content and in their correlation with other tests that the use of either is justified. A study by Pullias (72) reported variability in results from objective achievement tests. Thirty-five teachers constructed 63 examinations in geography, history, and health. These were paired and administered to 68 groups. Three standardized objective tests in each of seven subjects and two in each of three subjects were also administered to 460 sixth-graders. Conclusions to be drawn from this study are, according to the author, that (a) a test may be objective in the sense that personal opinion is eliminated in scoring and still fail to remove important personal elements from the evaluation of pupils' achievement; (b) measures of pupil achievement obtained from different informal objective tests may be expected to vary to a considerable extent; and (c) pupil ratings based upon standardized tests show marked disparity.

H. A. Gray (39) studied tests recorded and reproduced by sound. Three hundred and seventy pupils in Grades II through VIII were subjects. Tests were adapted from the arithmetic reasoning, language usage, and spelling sections of the Modern School Achievement Tests, and arranged in both sound record and mimeographed form. After analyzing the scores made on the two types of test, Gray concluded that "the pupils in question were able to detect errors in spoken language more readily than they could in the printed form." The results were not conclusive, however, and more experimentation in this field is needed.

Studies of General Achievement

In a study of variations in educational accomplishment in a number of school subjects among children of normal intelligence, Stout (81) reported that although the intelligence quotients of children may be normal it is clear that they are not as a rule homogeneous in other traits. For this study a wide range of rating scales and aptitude, achievement, and mental tests of both the individual and the group types were used.

Schrepel and Laslett (78) tested 121 junior high-school pupils in Grades VIII and IX with the New Stanford Tests in the spring and again in the fall to check the loss of knowledge during the summer vacation. The results showed no serious losses with the possible exception of arithmetic computation. The authors concluded with the suggestion that strenuous reviews in the autumn are psychologically and pedagogically questionable.

Experiments comparing the educational achievement of various groups are reported by several authors. For example, Breidenstine (6) reported a study concerning the educational achievement of pupils in differentiated and undifferentiated groups. The New Stanford Achievement Tests were used to measure educational achievement. A summary indicated that both

groups were about equal in mean composite score, and that both were almost equal in E.Q. The undifferentiated group was slightly superior at every level, however. Moore (57) reported a study of the educational achievement of delinquent and dependent boys. The Otis Self-Administering Test, Intermediate and Higher Examinations, and the Modern School Achievement, Short Form (spelling omitted), were administered. The author stated, "When the subjects in this study are compared with local norms of retardation, normalcy, and acceleration for chronological age, both groups are considerably below the Tennessee school children." In fact, the dependents showed twice as high a retardation, and the delinquents three times as high. Scholastic difficulties of the children of immigrants have been studied by Overn and Stubbins (64). Native American children made up the control group and children from foreign language speaking homes made up the experimental group. The Pintner Cunningham Primary Mental Test and the Metropolitan Achievement Tests were used. The authors concluded that "special procedures should be found to aid the entrants to the first grade from foreign language speaking homes to overcome language handicaps as rapidly as possible."

Smeltzer and Adams (79) reported a study of the educability of transients. Forty-three transient boys, who were admitted to the Industrial School at Lancaster, Pennsylvania, to receive an extensive six months' course in vocational education, were administered the Terman Group Test of Mental Ability, Form A, the New Stanford Achievement Examination, Advanced, Form V, the Stenquist Mechanical Aptitude Tests I and II, and the Thurstone Personality Schedule. Final tests, administered to the twenty-five remaining subjects, consisted of other forms or repetitions of the same form when only one was available. Results showed that "contrary to many subjective statements regarding the characteristics of transient adolescents who have taken to the 'road' during the past few years, many of these boys appear to be typical members of a population with unfortunate situations in home environment. . . . These transient boys represent a group of late adolescents who are definitely educable."

Traxler (87) and Ross (77) reported experiments involving the relationship of achievement to various other factors. The former was concerned with the correlation of achievement scores and school marks. The Cooperative Test Service Examinations were used for 20 school subjects and reading was measured by the Nelson-Denny Test. Marks assigned on a percent basis during the year 1934-35 in eight independent secondary schools for boys were also used. Traxler stated, "The general conclusion to be drawn from this article is that, although intelligence and reading skill, as measured by the American Council Psychological and the Nelson-Denny tests, operate to raise the correlation between scores on achievement tests and school marks, a positive and significant degree of relation usually exists aside from the influence of either of these facts." Ross (77) attempted to determine the relationship between intelligence, scholastic

achievement, and musical talent. Subjects were 1,541 pupils in Grades V through XII in the California public schools. Intelligence was measured by the Terman Group Test of Mental Ability, achievement by the Stanford Achievement Test, Form V, and musical talent by the Seashore Tests of Musical Talent. Results showed a low degree of relationship between intelligence and musical talent. Relationship between scholastic achievement and musical talent is so low that a measure in one cannot be used to predict a score in another.

Prediction of School Success

Factors useful in predicting educational success have been the subject of various studies. Dunlap (24) reported a study of preferences as indicators of specific academic achievement. He concluded, "It would seem that if the preliminary form of the preference blank described were refined and extended, the expressed preferences of an individual could be used to increase materially the accuracy of the prediction of future academic success at the junior high-school level." Ficken (30) studied the subject of predicting achievement in the liberal arts college. He found that the Minnesota College Aptitude Test correlates higher with grade point averages at the end of one semester and at the end of one year in the case of women than in that of men. Unsegregated College Aptitude Test scores and grade point averages show low correlations. However, high-school rank and grade point averages gave a correlation of .67. Ficken stated, "One cannot avoid the conclusion that the College Aptitude Test is of doubtful value for general prediction purposes at this institution. . . . It does not follow that the test is not a good one for other purposes, such as, for example, the motivation and guidance after matriculation of those students who are not working up to capacity."

Variations among high-school seniors in promise and performance measures were studied by Eckert and Mills (27). Four hundred and forty-two high-school seniors in the college entrance curriculum in the Buffalo high schools were the subjects. Achievement was measured by the average on the Regents' examinations; promise was measured by a lengthened form of the American Council Psychological Examination. Other tests were administered as follows: the history and English parts of the Iowa High-School Content, the Strong's Vocational Interest Blank for boys, the Manson Occupational Interest Blank for Women, the Neumann Test of International Attitudes, Zyve's Stanford Scientific Aptitude Test (modified), and Willoughby's Revision of the Thurstone Personality Schedule. Results led to the following conclusions: (a) Teachers' marks are as good a criterion for differentiation as the Regents' examination. (b) Performance in mathematics and science is more indicative of scholastic application than marks in other fields. (c) Measures of studiousness show some of the clearest differences.

Peck (68) was concerned with the relationship of drawing performance

and school achievement of young children, and with special factors influencing that relationship. A non-verbal group test (Prediction Test) based solely on drawings of beginning children was administered to 1,000 children. Correlations with Gates Reading Tests, a flash-card word test, and teachers' estimates of school achievement led to the conclusion that "children's drawings, obtained in the manner chosen for the study, probably furnish as accurate prediction of school success as do other predictive measures in common use."

Achievement in Reading

Reading readiness—Hilliard and Troxell (48) reported a study of informational background as a factor in reading readiness. Tests used were the Sangren Information Tests, Smith Vocabulary Test, and the Healy Picture Completion Test. Reading readiness was measured by the Lee-Clark Reading Readiness Test and the Stone-Grover Classification Test. The Gates Primary Tests were used to measure reading status at intervals. The rich background group was decidedly ahead of the meager background group in sentence and paragraph reading, and only slightly superior in word recognition. Wilson and Burke (95) studied reading readiness and later achievement. The Van Wagenan, Metropolitan, and Stone-Grover Tests were administered to first-grade pupils. These scores were correlated with fourteen reading tests, teachers' November ranking of predicted achievement, and teachers' May ranking of actual achievement. Teachers' November prediction gave the highest correlation with reading ability as later measured by tests. A continuation of this study is also reported, with similar conclusions (94).

Grant (38) compared the predictive value of the Metropolitan Readiness Tests with the Pintner-Cunningham Primary Mental Test. Two hundred and sixty first-graders were subjects. Two years after the administration of these two measures, the Gates Primary Reading Test was administered. To those making perfect scores on this measure, the Metropolitan Achievement Test in Reading was administered and in some cases the DeVault Primary Reading Test. Results indicate that the Metropolitan Readiness Test measures factors significantly related to later success in reading skills and that it is on a par with the Pintner-Cunningham in providing a basis for prediction.

Dolch and Bloomster (18) reported an experiment involving phonic readiness. General maturity was measured by the Pintner-Cunningham Primary Mental Test and the Detroit First-Grade Intelligence Test. Tests 1 and 2 of the Basic Reading Tests, Word Attack Series, were used to measure the use of phonics. Results showed that children below seven years of age made only chance scores in phonics. These results, according to the authors, may indicate a minimum age for teaching phonics.

Studies of primary grade reading—Hill (47) studied the process of word discrimination in individuals beginning to read. Pupils were re-examined

after twelve or fourteen weeks of training, with achievement tests which consisted of the actual reading material presented to the subjects during the training period. Training tended to direct attention to the beginning of words, and even though individual patterns were somewhat affected, the group pattern of difficulties showed little change over the training period and under the teaching methods employed. Donnelly (20) studied the growth of word recognition in Grade I. Three hundred and eighty-nine first-graders were given a test of 150 words chosen at random from the first two levels of the Gates Vocabulary List. Of thirty pupils in the bottom tenth at the end of the third month, twenty were in the same position at the end of the year. Girls were superior to boys. The author concluded that there is need for more inventory testing to determine mastery of basic vocabulary.

McDade (53), in an experiment with first-graders, eliminated oral reading entirely. Results from the Gates and Metropolitan Primary Reading Tests at the end of the year showed gratifying results. Comparisons with classes taught by other methods were favorable to the non-oral reading group. Individualizing instruction in reading as tried by Worlton (98) in the Salt Lake City schools showed significant gains as measured by the Gates Reading Tests, Types A and C. Games as a means of teaching arithmetic and reading were considered by Goforth (36). Read-O and Add-O were the games employed with second-grade pupils. Marked gains were reported together with increased interest. Wheeler (93) also reported a study involving the Read-O games. Experimental and control groups were set up in the first grade on the basis of the Dearborn Intelligence Tests. A final measure of reading was obtained through the use of the DeVault Standardized Reading Tests. Results showed a high correlation between the word recognition of Read-O and general achievement. The relationship of pictures to reading was studied by Miller (55). Initial and final tests on three stories were constructed; no significant differences for the use of pictures were found.

Reading in the higher grades—Traxler (88) reported the results of an experiment in teaching corrective reading to eight seventh-grade pupils for nine weeks. According to results of tests, seven "derived considerable lasting benefit from the instruction." Garrison (33) was also interested in a remedial reading program with pupils in the ninth grade. Sangren-Woody Tests were used as initial and final measures. Out of 33 pupils, of whom all but two were reading at the sixth-grade level, all but four showed improvement.

Seeking new methods and objectives in teaching dull-normal pupils of the upper grades to read, Walcott (92) employed the work-sheet method to facilitate the study of subjectmatter and to cultivate skills constituting reading ability. A retest with the Iowa Silent Reading Test seemed to substantiate the use of this method. Another experiment employing three instructional units yielded encouraging gains for low average pupils.

Gates and Bond (34) studied five "dull-normal" and one remedial reading group in the Speyer Experimental School. The Modern School Achievement Test was initially administered in February and finally in June. No formal classes were held in subjectmatter areas, but special attention was given to the developing of competence in reading. Reading gains in all classes were large, ranging from six to thirteen months. Additional measures were applied in the form of the Gates Primary and Advanced Reading Tests. The average I.Q. represented by the classes was 82.

Cramer (13) reported a study involving the administration of reading and arithmetic tests, constructed and administered in Australia, to 1,000 California and Washington pupils. Results indicated a tendency for Australian children to score better in arithmetic and for American children to score better in reading except in Grades VII and above.

Vocabulary studies were reported by Anderson and Fairbanks (1) and Tilley (84). The former were concerned with differential factors in reading and hearing vocabularies of university freshmen. The Inglis Tests of English Vocabulary were used. Conclusions are that "vocabulary ability is a centrally determined function, operating, on the average, independent of the mode of presentation of material." The study by Tilley reported a technic for determining the relative difficulty of word meanings among elementary-school children. A multiple-response test was constructed from the Survey Tests of Vocabulary, the Lower Extension of the Inglis Vocabulary, and eighty words of the vocabulary section of the Stanford Achievement Examination. A self-appraisal technic was also employed. This technic apparently had a rather high validity which varied as did the intelligence of the children.

Bilingual children—Reading and arithmetic abilities of Spanish and English speaking children have been studied by both Manuel (54) and Kelley (49). The former is concerned with both tool subjects. The average Spanish speaking child suffers a serious and persistent language handicap at least as high as the eighth grade. Kelley found results similar to those of Manuel; the Spanish speaking children were below the norm in all grades, with deficiencies unconfined to any particular phase of reading ability.

Reading and various factors—Tinker (85) studied the reliability and validity of eye movement measures of reading. Seventy-seven university sophomores and fifty-seven freshmen were subjects. Where group comparisons are concerned, eye movement measures for as few as five or six lines have adequate reliability; in individual diagnosis, however, twenty or more lines are necessary for adequate reliability. Tinker and Paterson (86) studied typographical factors influencing speed of reading on the Chapman-Cook Speed of Reading Test. Cloister black retarded reading about 16 percent. Traxler (90) found no significant differences between the sexes in rate of reading in high school. Anderson and Tinker (2) studied speed in reading performance of 110 college sophomores tested

individually on the first five parts of the Iowa Silent Reading Test. They found that "the data justify the conclusion that when an adequate method of measurement is employed, there is an intimate relation between rate of reading and comprehension scores for the type of material here considered."

Pace (65) studied laterality and reading ability in high school and college. Laterality was determined by means of a questionnaire. The Minnesota Reading Examination, Form A, and the Minnesota Speed of Reading Test, Form A, were administered. Students who were shifted, ambidextrous, or left-handed showed no significant inferiority on the Minnesota Reading Examination, but some inferiority was apparent for this group on the Minnesota Speed of Reading Test.

The relation of ability in reading to success in other subjects was investigated by Finck (31) by means of the controlled group technic. For twenty-two pairs from Grades IV through VIII it was found "that improvement in ability to read is accompanied by improved achievement in those subjects which involve a great deal of reading." McCullough (52) conducted a similar study with ninth-graders.

Swanson and Tiffin (83) were interested in the relationship of performance on the Betts Telebinocular and the Iowa Silent Reading Test of 267 freshman men. Conclusions reached seem to indicate that it is "improbable that differences in visual efficiency are causally related to differences in reading ability among college students. . . . This statement is equally true whether intelligence is left uncontrolled or whether it is held constant by means of partial correlation." Witty and Kopel (96) have used the Betts tests of visual sensation and perception and of oculomotor and perceptual habits in an effort to determine the relationship of poor reading to reversals, fusion difficulties, muscle imbalances, and mixed eye-hand dominance. This latter factor was measured by a modification of the Koch handedness questionnaire, the manoptoscope, dynamometer, and other devices. Subjects were 100 public school children, with I.Q.'s of 80 or above, whose reading scores were lowest among 2,000 pupils in Grades III to VI, inclusive, on several standardized tests. The Metropolitan and Gates Tests indicated that the control group was one and one-half grades better in reading. Conclusions reached were that "the etiology of reading disability (as an entity) lies in no single visual (or other noumenal) factor."

Achievement in Arithmetic, Algebra, and Geometry

Porter (71) reported a three-part experiment to determine the effect on achievement in geometry and algebra of spending one class period a week on mathematical recreation. The Otis Self-Administering Test, the Lane-Greene Unit Achievement Tests in Plane Geometry, the Hotz First Year Algebra Scales, Hart's Geometry Tests, the Columbia Research Bureau Plane Geometry Tests, a county eighth-grade examination, and the

Silance-Remmers Scale for Measuring Attitude toward Any School Subject were administered. Results showed that the experimental groups were most interested, and the conclusion reached by the author was that the use of mathematical recreation in class work is advantageous for achievement.

Morrison (59) conducted an experiment to evaluate the mass method versus the individual method in teaching multiplication to fourth-grade pupils. Sixty-two pupils were taught according to the mass method and 75 pupils were taught according to the individual method. In October the Wilson Process Test in Multiplication, 5P, was used as an initial test. It was repeated as a final measure in March and as a retest in the following September. Forty-seven periods of 45 minutes each were used. The individual group used the Wilson Drill Book in Multiplication. Results showed that the individual method group experienced a slightly greater gain and also made a greater permanent gain. Betts (3) reported the results of a study involving the use of a calculating machine for arithmetic instruction. Thirteen pupils in Grade VIA were subjects. Tests used were the Compass Survey Test and the Compass Diagnostic Test (XVIII, Problem Analysis). The author reported: "Limited test data secured so far probably are of value only to the degree that they permit a forecast of factors to be controlled in a more extensive investigation. . . . The typical instructional material for the sixth grade does not provide enough problem drill to justify extensive use of calculating machines. Further investigation will probably be conducted on a higher level."

Harap and Barrett (44) undertook to discover whether fundamentals could be learned in an arithmetic activity program for Grade III in which integers are studied. Ten activity units were covered in the year. The Los Angeles Diagnostic Test in Fundamentals of Arithmetic gave an average grade score of 4.1. Harap and Barrett said, "These results confirm our earlier findings that the fundamentals can very satisfactorily be learned in a program of arithmetic units based on real situations in which arithmetic is learned as it is used, not before it is used." The direct and indirect methods of teaching the addition combinations were studied by Breed and Ralston (5). The controlled experiment procedure was used in Grades I and II. Tests used were the Otis Group Intelligence Scale, the Buswell-John Addition Test, and an Initial Combinations Test (non-standardized). In Grade I the Curtis Standard Research Test, Series A, was also administered. Results show that the indirect method is better in complex addition and as good or better in addition combinations.

Brownell and Watson (7) conducted an experiment on the comparative worth of personal interviews and the analysis of tests as diagnostic methods in arithmetic. The test used was a modified form of the Brueckner Diagnostic Test in the Addition of Fractions. Results showed that the personal interview and the analysis of tests were about equally effective in identifying the total number of faults for the entire group. When the diagnosis

is that of the difficulties of individual children, the personal interview is both more reliable and more valid. Feder (29) attempted to determine the effect of directions, and arrangement of items, on student performance on the number series test of the Mathematics Aptitude Test, Form X, of the Iowa Placement Examinations. Three forms were constructed. One was the original, another retained the original order with improved directions, and a third was a power test with original directions. Results led to the following conclusions: (a) clear-cut directions are superior to longer, more detailed explanations; (b) when arranging items in order of difficulty, care should be taken that items are not grouped according to common basic principles which are not found in succeeding groups.

Grossnickle (41) reported a study involving concepts in social arithmetic for the eighth-grade level. A list of 68 mathematical concepts in the business usages of arithmetic found in a majority of 13 different textbook series for the seventh and eighth grades were incorporated in a four-response multiple-choice test. The tests were administered to 1,337 pupils completing the eighth grade in 8-4 plan schools. The level of attainment in mastery of concepts in most schools was about the same; in only one school was the average attainment more than two-thirds the total possible score.

Gundlach (42) conducted an experiment with a twofold purpose: (a) to give information concerning the nature of the curve of growth in ability to work types of examples in common fractions for pupils in Grades VII to XIII, inclusive; and (b) to determine to what extent the factor of mental capacity affects the curve of growth in ability of pupils of the secondary school to work types of examples in the operations of common fractions. Gorman (37) administered a 215-item test of arithmetic vocabulary to 92 teachers in Grades I through VI, and to thirty students enrolled in a class in the teaching of elementary arithmetic. He found a significant difference between the arithmetic vocabularies of experienced teachers and students in elementary education, and that a significant proportion of both teachers and students manifest a lack of understanding of a number of important signs and abbreviations in arithmetic, and both need to improve in the ability to define in simple language many of the basic concepts.

Achievement in English

Traxler and Anderson (89) gave two forms of an essay test in English to high-school pupils in a carefully controlled situation. The papers were scored by two individuals. Results showed that the reliability of the reading of the papers was high, but that the reliability of pupil performance was relatively low.

Wagner and Strabel (91) attempted to determine what measures, available at college entrance, best predict subsequent performance in English. Grades in high school and on New York Regents' examination, scores on

the American Council Psychological Test, the Iowa High-School Content Examinations, the Cooperative English Test, and the Nelson-Denny Reading Test were studied. General conclusions seem to be that "college English performance may be predicted about equally well by a measure of secondary school English, a secondary school language, general high school performance, or the Cooperative English Test. Vocabulary seems especially important for success of boys; general information for girls."

Lowen (51) reported an experiment in which she attempted to leave environment as the one variable affecting the output of poetry by two groups of children. Environment was judged by Sim's Score-Card, home visits, and the principal's survey. Lowen said, "In this experiment environment made no appreciable difference in the quality of poetry produced."

Netzer (60) was concerned with an attempt to evaluate pictures, incomplete stories, and objects as stimuli for oral language. Responses of fourth-, fifth-, and sixth-graders were recorded electrically through microphonic equipment. Subjects responded best to objects, next to stories, and third to pictures. An attempt to rate the compositions on the Thorndike Extension of the Hillegas Scale proved unsatisfactory with the result that oral composition scales were developed.

Garnett (32) reported a study of the status and improvement of college freshmen in certain skills in English composition. Six tests were administered in three teachers colleges. The author concluded that "only a small number of students are adequately prepared for the high art of teaching the basic skills in written English."

Achievement in Foreign Language

Wrightstone (99) reported that the scores of 125 pupils taught according to newer type practices were superior in Latin to those of pupils who had been taught according to standard practices. The superiority, however, was not statistically significant. De Sauze (15) reported the results of the American Council French Test and parts of the Cheydleur French Test administered to students in the Cleveland schools where the teaching of foreign language involves a multiple or eclectic approach. Results of the reading versus the eclectic method showed the latter to be superior in Cleveland schools for the second and fourth semesters in total achievement and also when the silent reading scores alone are considered for fourth-semester pupils.

Stalnaker and Kurath (80) constructed two twenty-minute tests in German vocabulary which are claimed to be highly reliable. One was a best-answer recognition test and the other a context recall test. Results of administration to 184 students in elementary German showed the context test to be slightly more reliable and to be preferred by a slightly greater number of the subjects as a fairer test. Both tests appear to measure very nearly the same abilities.

Measurement of Spelling Ability

Northby (62) compared five types of spelling tests for diagnostic purposes. Twenty words were selected from the Iowa Spelling Scales and administered to forty-three sixth-graders in story form, timed dictation, list form, multiple choice, and orally. Timed dictation and story form were most difficult, and multiple choice the easiest; the list form appears best for diagnostic purposes. Stuit and Jurgensen (82) conducted a similar experiment with freshman students at Carleton College. The Cooperative English Test calling for the identification of 53 misspelled words in eight themes, and a dictation test presenting these same 53 words were administered. Students had a tendency to score higher on the dictation test. The authors concluded, "All factors considered, it seems that a test requiring a student to write dictated sentences would be more valid as a test of spelling ability."

Growth in Handwriting

Conard (11) studied the influence of manuscript writing and type-writing on the development of 150 children in the second, third, and fourth grades. Results of other subjects were noted. The manuscript tests were scored according to Conard Manuscript Writing Standards and one point was deducted for each typing error. "As a result of the study . . . it appears that the typewriter is influential in developing the children's creative writing, does not affect handwriting detrimentally, but appears to stimulate both quality and speed in handwriting, and has a minor influence on other subjectmatter." Goetsch (35) was concerned with the effect of the shift from manuscript to cursive writing upon the pupils' writing and composition in the intermediate grades. Cursive writing was taught in all grades of control cities; manuscript in Grades I and II, and cursive in Grade III, of experimental cities. Specimens were analyzed according to the Kansas City Scale for Measuring Handwriting and the Nassau County Supplement of the Hillegas Scale for Measuring the Quality of English Composition. The data showed no evidence that either type of early training leads to a better quality of composition in the later grades.

Achievement in Science

Buckingham and Lee (9), using true-false tests and organization tests in natural science, showed that college freshmen may use memory alone to secure high scores on a true-false test and still be unable to see the relationship between items and a central thesis. They suggested that it is necessary to go a step beyond the objective testing of correctness alone to meaningful organization. In a similar study, Downing (23) devised a test to measure skill in the use of some of the elements of scientific thinking and the safeguards that are needed. Fifteen questions were administered to over 1,000 pupils in Grades VIII through XIII in science classes only. Conclusions are "that ability to think scientifically is a complex of a number of component

abilities and that these develop at varying rates and differently in different communities."

Peterson and Douglass (70) compared the results of using published workbooks with pupil-made notebooks in general science. Pupils were paired on the basis of the Otis Group Intelligence Test, chronological age, and scores on an objective test given at the beginning of the year. Progress was measured by assignment tests over units of the course, an objective test at the end of the first semester and at the end of the third semester, and the New York Regents' examination in general science. During a second year the Ruch-Popenoe General Science Test was administered as an initial and final test. Although there were only two significant differences in favor of the notebook method, six other differences favored this method. Ruch-Popenoe results, although not yielding a fully reliable difference, favored the workbook section.

Gutzeit (43) reported the results of teaching an abstract concept in science by means of the motion picture. The controlled group technic was used. Ten-minute tests over elementary molecular and atomic theory were constructed. Results showed subjectmatter to be within the conception range of the eighth grade. The tests were too simple and brief to gauge the effectiveness of teaching, however.

Rosenlof and Wise (75) compared the relative achievement of pupils in courses in physical science and in physics and chemistry on the basis of three different factors. Pupils were paired on the basis of the Otis Self-Administering Test of Mental Ability, Noll's What Do You Think Test, and a comprehensive physical science test devised for this study. This latter test was also used as a final test together with the Cooperative Physics Test, and the Cooperative Chemistry Test. The authors felt that as a result of this study a fusion of physics and chemistry is possible and desirable.

Dickter (17) studied the relationship between scores on the scholastic aptitude test and college marks in chemistry at the University of Pennsylvania. The author concluded that results on the mathematics section showed enough promise to warrant its continued use in the scholastic aptitude tests.

Burnett (10) reported the results of an experiment in the problem approach versus the recitation method in the teaching of biology. The Hoff Scientific Attitude Test was administered at the end of six weeks, the Ruch-Cossman Biology Test at the end of twelve weeks, and comprehensive formal objective tests at the end of each unit. Results favor the problem approach throughout. Another study of teaching methods was made by Douglass and Fields (21) who compared the merits of the daily assignment-daily recitation and the unit assignment methods of teaching high-school chemistry. Results of the Powers General Chemistry Test and an experimental test of high reliability led to the conclusion that neither

method was distinctly superior and that factors other than method were responsible for differences in final scores.

Achievement in Social Studies

Reilley (73) conducted an experiment in an effort to determine the interest of high-school seniors in politics. Tests were constructed from material of current newspapers and magazines. The tests were administered to seniors and also to freshmen in a school where the development of political interests had been one of the objectives of the social studies course. Results show that an interest in political matters may be developed if the school authorities make definite provision for it.

Herrick (46) proposed certain instruments for the evaluation of pupils' thinking concerning current social questions. Although at the time of his article the tests had not actually been tried in the classroom, the author believes that if a high correlation is obtained between the pupils' ability to judge the soundness of the arguments of others, and their own position in using sound arguments, the proposed instruments may be a valid means of measuring the quality of one aspect of a pupil's thinking.

The value of the Stone Reading Test, the Otis Group Intelligence Scale, Advanced, and the Wesley Social Terms Test as instruments for predicting achievement in United States history was investigated by Bolton (4). The Wesley Test was found to be significantly better for purposes of prediction than either of the other two.

Congdon (12) studied papers written for entrance examinations to 26 colleges, in an effort to ascertain the differences in achievement in geography, civics and history, and general science, between students from different sections of the country, and from rural and urban populations. Results show that geography and general science are affected both by locality and population; differences for civics and history are not statistically significant; locality exerts the greater influence on geography, and rural-urban status upon science.

Douglass and Pederson (22) reported an experimental study to determine the value of large units versus daily assignments in eight sections of American history in high-school classes. Initial tests were devised by the experimenter. Twelve weeks of instruction were followed by an objective test devised by the experimenter, and the Iowa Every Pupil Test in American History. Results seem to point to the superiority of the large unit plan.

Park and Stephenson (66) studied the value of visual aids in teaching language arts and social studies. Two groups of Grade VIIB pupils, fifteen in each group, were administered a fifty-item objective-type test over the unit to be taught. Progress during the experiment was checked at regular intervals by job tests. Results of final tests show that visual aids are

worthwhile and that a close correlation of language arts and social studies and literature make for a better understanding and appreciation of the material.

Music Ability and Achievement

Ross (76) found 428 Indian children in Grades VI through XII to be inferior to white children on the Seashore Music Talent Test. Japanese children, however, compared favorably at all grade levels with the white children.

Dean (16) used the Seashore Musical Talent Tests and the Terman Group Test of Mental Ability to determine their value in predicting the success of entering students in the Eastern Montana State Normal School in required courses in sight-singing and ear-training. Results show that intelligence is not as important as prior musical training and that the Seashore tests of pitch and memory were most predictive. Farnsworth (28), after attempting to determine the relative values of music capacity tests and intelligence tests in the prediction of music grades for college students, concluded that "music capacity and intelligence tests have variable potencies in the prediction of music grades." He calculated correlations between the Thurstone Psychological, Iowa Placement, Seashore Sense of Pitch, and Seashore Tonal Memory tests, and grades in music theory, and history and appreciation of music. Lamp and Keys (50) conducted a somewhat similar experiment to determine whether or not aptitude for specific musical instruments can be predicted. The Terman Group Intelligence Test and the Seashore Tonal Memory and Pitch Discrimination Tests were administered and certain physical measurements were taken of 151 ninth-grade pupils. Conclusions are that the Seashore Tests do not yield an index of aptitude for brass, woodwind, or stringed instruments adequate for individual guidance. The predictive value of the Terman test is even less. Teeth evenness and length or slenderness of fingers bear no appreciable relationship to performance. A combination of measures, however, proved to be of sufficient predictive value for the brass horn to be of use for guidance purposes.

Rigg (74) was interested in the relationship of discrimination in music to discrimination in poetry. Seventy-one college men were given the Oregon Music Discrimination Test, the Rigg Poetry Test, and the American Council Psychological Examination. Intercorrelations were low.

Teaching Conditions and Achievement

Eastburn (25, 26) reported studies of the relation of class size and the efficiency of instruction. English and history were the subjects considered in an early investigation. Pupils were paired on the basis of the Terman Group Test of Mental Ability, the Columbia Research Bureau American History Test, and the Columbia Research Bureau English Test. Grade points, age, and sex were also considered. Initial tests given to groups

were the Columbia Research Bureau American History Test, the Iowa General Information Test in American History, the Columbia Research Bureau English Test, the Iowa Placement Test in English Training, and the literature section of the Iowa High-School Content Examination. Different forms of these examinations were used as final measures. The Hand-Carley Student Reaction Form was also administered. Results of this study and of a later investigation employing similar tests led to the conclusion that "since some teachers can handle large classes as effectively as small classes, it becomes the responsibility of the school administrator to determine which of these teachers can teach large classes effectively and in what subjects and on what ability levels."

Crawford and Carmichael (14) reported the results of a study involving three years with home study and three without in Grades V to VIII. Results on the Stanford Achievement Test revealed no significant differences, although pupils without home study showed a significant drop in high-school marks.

Herr (45) conducted an experiment in which 97 junior high-school pupils were allowed to reduce the three-year course to two. Evaluation was made by administering certain standardized tests to three senior high-school classes and comparing the experimental with the control groups. The Columbia Research Bureau Tests in Plane Geometry were administered to the sophomores; the Columbia Research Bureau Tests in Chemistry and American History to the juniors; and the Purdue Diagnostic English Test and Peters' Test of General Information were used with the seniors. Results show that "so far as scholastic achievement in senior high school is concerned, no outstanding differences in the achievement of the two groups are found. . . . It must be noted, however, that the measures for which the differences are significant, are in favor of the rapid progress group." Other factors studied were extra-scholastic activities and social adjustment, which showed no significant differences.

Morgan (58) was concerned with evaluating the seminar method in a course in elementary educational psychology for superior students. Two control groups and an experimental group were used. Matching was done on the basis of the Thurstone Psychological Test and results of a final examination in elementary psychology. The final examination in educational psychology showed a tendency for the experimental group to be superior.

Wrightstone (100) provided comparative data between newer- and standard-type public schools, at the elementary, upper elementary, and secondary levels. Results were reported by the author which indicated that "newer type practices will produce equal if not superior achievement in desirable skills, knowledge, attitudes, personal and social adjustments, and character traits."

CHAPTER II

Educational Prevention, Diagnosis, and Remediation¹

FRED P. FRUTCHEY

THE MOST IMPORTANT use of evidence concerning the mental, social, emotional, and physical behavior of boys and girls is to aid in developing an understanding of them. Teaching may be based upon valid evidence, carefully collected and wisely interpreted, or it may rest upon a series of untested assumptions, poor guesses, and wishful thinking—or some degree between the two. Teaching which is carefully related to the future as well as the present development of boys and girls must have a careful factual basis, including not only cross section data but also long-time records. As Lefever (123) said, "Without a definite basis for determining the nature and extent of the child's growth, educational planning will be reduced to sheer guesswork."

There has been some emphasis in the literature upon prevention, rather than upon remediation. For the purposes of the present chapter, however, we shall not be concerned with the distinction, since we are here giving attention primarily to the fact-finding and appraisal aspects which underlie prevention, diagnosis, and remediation alike.

The general desirability of using tests at the beginning of the school year in order to understand pupils and to be able to provide appropriate educational experiences was described by Chase (107). Tyler (133) and Lee (122) dealt at greater length with the close relationship of evaluation to the curriculum. Newland and Ackley (125) commented that guidance should rest not only upon the diagnosis of failure and subsequent reconstructive measures but also upon constructive measures in the prevention of failure.

The most significant treatise on educational diagnosis which has appeared in the last three years is the *Thirty-Fourth Yearbook of the National Society for the Study of Education* (124). The yearbook contains chapters dealing with factors associated with learning difficulty. One section is devoted to the principles and technics of educational diagnosis and treatment. Two chapters by Tyler (132, 134) discuss ideas fundamental to any diagnosis or inventory. Two sections are devoted to diagnosis in reading, English, arithmetic, social studies, natural science, health education, behavior disorders of children, speech, vocational interests, abilities and aptitude, musical talent, art, leisure-time activities, and creativeness. The final chapter by Stenquist (128) takes up the administration of a program of diagnosis and remedial instruction.

¹ Bibliography for this chapter begins on page 558.

Clarification of Objectives

A more exact diagnosis in education rests upon a greater clarification of the important intangible objectives of education by identifying and describing types of behavior characteristics of each of these objectives. The study by Rankin (126) on creativeness is especially valuable because it illustrates how an intangible objective can be made concrete and meaningful through the specifying of areas of activity and characteristics of behavior. Hartung (120) described aspects of the ability to interpret data. A clarification of social sensitivity, an important objective of the social studies, was presented by Taba (130). A bulletin by Fawcett (112) illustrated some characteristics of behavior involved in an understanding of the nature of proof—a mathematics objective. Dale (108) discussed diagnosis in leisure-time activities. In diagnosing reading skills and abilities in the elementary school, Wrightstone (143) presented a chart showing a list of reading deficiencies, their probable symptoms and remedial treatments. Witty and Kopel (137) reported an analysis of the difficulties of poor readers. Thompson (131) analyzed information test results into areas of content. These studies illustrate the clarification and analysis of general objectives into subobjectives and characteristics of behavior which are to be treated in a remedial procedure.

Devices for Gathering Evidence

An examination of the literature indicated that many types of devices were used in diagnosis. Various writers (134, 144) pointed out the need for different devices. Davis (109) used checklists of behavior characteristics relating to reading and other types of behavior. Strang (129) used a student's own analysis of how he reads a problem as a means of obtaining some insight into his mental behavior. Various instruments to test vision, hearing, phonetic aptitude, and other kinds of physiological and psychological tests were employed.

Significant contributions in the uses and interpretation of test results as a basis for remedial instruction are being made under the direction of R. W. Tyler by the Evaluation Staff of the Progressive Education Association's Commission on the Relation Between School and College. Although reports of this research have not appeared in the literature up to the closing of the bibliography, they should be mentioned here because they deal with the analysis of various characteristics of behavior which represent a general objective. Interpretations of test results are made in terms of kinds of behavior as well as in terms of areas of subjectmatter.

Diagnosis in Reading

Many of the reported studies contributing evidence of results of remedial and corrective instruction in the school are in reading. These studies reflect concern about the relation of pupil interests, rapport, pupil recognition

of attainable goals, extensive reading, and teacher points of view to remedial reading instruction. Witty and Kopel (141) used pupil interest in selecting reading materials and planning a reading program. They stated, "From indifferent, fearful, and unhappy youngsters most have changed into interested, alert participants in numerous school activities." They believed that the changes brought about were not only the results of methods used but also of the point of view of the teachers, "... a sympathetic understanding of children and a sane attempt to meet their legitimate needs." They had objective records of increased amount of voluntary leisure reading and a more intelligent and frequent use of books and library facilities. Witty and Kopel (140) further reported that "at the beginning of the work about one-third of the poor readers approached any reading task with trepidation. The change in attitude when attainable goals were sensed brought about a personality alteration not readily describable in objective terms."

In using an extensive reading program in remedial teaching, Ansley (101) found that an experimental group gained in comprehension the equivalent of one year more than a control group. Anecdotal records of the pupils' interests in reading showed desirable shifts. Garrison (113) reported a variety of testing methods used in a remedial approach based upon pupils' interests and extensive reading. Gains in rate and comprehension and greater interest in reading were found. Brooks (105) concluded that the point of view of the teacher in creating and encouraging a desire to read is an important part of remedial work.

The data from intensive studies of remedial reading in New York City led Gates (116) to believe "that at least four out of five deficiencies in reading result from failure to recognize the individual pupil's failure and difficulties which crop out from day to day." A teacher must be alert and sensitive to behavior symptoms during the busy day of teaching. He claimed that investigations have been too much concerned with reading as an isolated activity.

Burk's study (106) of factors in the style of composition showed that fourth-graders are most interested in stories containing short simple sentences, and least interested in stories written in long complex and compound sentences. Long and complex sentences, however, have no effect on comprehension, and produce the highest rate of reading. Fourth-graders prefer stories containing direct conversation. Highest comprehension and rate of reading were obtained with stories using direct conversation. The writer pointed out that these are "rounded off" generalizations, not sharply supported by the data in the study.

In the diagnosis of reading difficulties it is important to identify and eliminate physiological disabilities in planning a psychological approach. Witty (139) pointed out: "In every case of reading disability search should be made for visual difficulties. Such examination is a vital item in the comprehensive individual diagnosis which should precede remedial

endeavor. It is clear that the cause of reading disability (as an entity) lies in no single visual factor."

Effect of Diagnosis and Remediation upon Teachers

A remedial program may produce desirable changes in the attitudes and points of view of teachers. Deady (110) stated that in the minds of teachers their diagnostic and remedial teaching program has transformed "grades" into "boys and girls." Eurich (111) stated that "the improvement of examinations stimulates instructors to become critically aware of the specific objectives and outcomes of their instruction and leads to changes designed to improve both selection of subjectmatter and methods of teaching. It compels the instructor to think of numerous illustrations of the way in which his instruction changes student behavior." A fundamental principle of diagnosis and remedial instruction relating to the point of view of the teacher is that conclusions drawn from research results become promising hypotheses when applied to an individual boy or girl (132). A competent diagnostician thinks of them as a tentative working basis subject to modification as new facts come to light.

CHAPTER III

The Essay-Type Test¹

CHARLES C. WEIDEMANN and BIRDEAN J. MORRIS

Limitations of the Essay Test

LACK OF RELIABILITY of scores was pointed out by Holroyd (148) as the first defect of the essay test. The reasons given for the unreliability of scores were the lack of objectivity and the influence of such factors as English construction, spelling, penmanship, neatness, arrangement of form, sympathy for the hard working but slow student, general improvement, and personal attributes on the grade. Other criticisms were: (a) restricted usefulness with almost no opportunity for diagnosis; (b) encouragement of cramming; (c) little basis for comparison between students or classes; (d) encouragement of bluffing; (e) consumption of an overshare of students' and instructor's time; (f) lack of any known formula for correction of guessing, as in objective examination; and (g) the restricted range of material that can be tested in a given time.

Criticisms of the essay test as used by many English teachers were listed by Stalnaker (157). The first objection is that teachers try to teach the pupil to write charming bits of nonsense on subjects of no interest to him instead of aiding him to express himself clearly and accurately within the range of his interests and abilities. Another weakness is the vagueness in the instructions given the students. The essay test is rarely read with a reliability of over .60, when it should be read with at least a reliability of .90. Explanations offered for this inconsistency in the rating of essay tests or themes were: (a) disagreement among masters in English on what constitutes a good theme, (b) the influence of the reader's physical condition on his grades, (c) the objection to grading a theme high, and (d) the traditional use of optional topics. Kandel (150) offered as his objections to the essay examination the unreliability of scoring and the time involved in the construction and marking of the tests. Wrightstone (160) objected to the essay tests on the basis of (a) time-consumption, (b) narrow range of information tested, and (c) unreliability and subjectivity variations in grading.

One of the real limitations of the essay test in actual practice may be that it is not measuring what it is assumed to measure. Doty (146) analyzed the essay test items and answers for 214 different items prepared by teachers in fifth and sixth grades and found that only twelve of these items, less than 6 percent, "unquestionably measured something more than recall." Doty set up a number of criteria for determining whether the answers involved a significant amount of reorganization of knowledge,

¹ Bibliography for this chapter begins on page 559.

or whether they involved only direct memory. Some of his conclusions were: "That a test item is essay in form gives no assurance that it is essay in fact. . . . The essay-type test used in the classroom measures memory more often than it measures any other mental process. . . . Teachers are not measuring all of the objectives of instruction which it is desirable and possible to measure" (146:30-31).

Values of the Essay Test

The essay test has been named as the only valid test of ability in written composition and as the best measure of artistry of effort in expression of thought (148). Other merits attributed to it were: (a) ease of construction and administration, (b) shortness of time used in construction compared to time taken for objective test, and (c) questions can be written on the blackboard, saving both labor and materials as compared with tests requiring mimeographing. The essay test has values for advanced students because: (a) it reveals reasoning procedures, originality, and initiative; (b) it tests ability to organize; (c) it offers opportunity to exercise discrimination and judgment; and (d) it allows for interpretation of thought.

Makers of objective items frequently argue that such items call for thinking and problem solving just as definitely as do essay tests. Jones (149) attacked this claim, pointing out that a large number of the objective items examined revealed very few predominantly thought questions. Most of the items were concerned with definitions, memorized formulas, dates, and proper names. Jones added, "When we are ready to give as much time to good essay examining as we now are giving to objective forms of examining in many centers, we will doubtless strengthen our college education considerably."

Wrightstone (160) said that essay questions may be defended for measuring certain objectives. The objectives named were: (a) an attitude toward some social, political, or economical phenomena; (b) the organization of social studies facts; (c) the interpretation, evaluation, or discussion of social studies facts and data; and (d) an application of social studies principles to described events or situations.

One type of defense for the essay test is to attack the reliability of the objective test. Pullias (153) after a thorough study which is of far-reaching significance concluded that: (a) tests may be objective in the sense that all personal opinion is eliminated in scoring and still fail to remove important personal elements from the evaluation of pupil achievement, (b) measures of pupil achievement obtained from different informal objective tests may be expected to vary to a considerable extent, and (c) pupil ratings based upon standardized test scores show marked disparity. Pullias based his conclusions on the analysis of 6,200 teacher-made objective test papers given to 3,100 pupils, and upon 1,380 standardized test batteries given to 460 pupils, in the fifth and sixth grades of public school systems.

Comparison of Mental Functions Measured

Meyer (151, 152) directed one group of students to prepare for a true-false test, a second group to prepare for a multiple-choice test, a third group for a completion test, and a fourth group for an essay test. He then gave each of these groups all four types of test. He found all four types of test equally good for the measurement of recalled facts, but found that the completion and essay tests gave higher scores for a later testing of the same students. Seeking evidence on the methods of study employed by the four different groups of students, Meyer obtained statements from them, and also examined their markings in the books they had studied. He concluded that students studying for the objective tests tend more to the (a) underlining of words, phrases, and sentences; (b) listing of names, places, dates, and numbers; and (c) framing of practice test questions. Those studying for essay tests tended toward the (a) making of summaries in paragraph form, (b) drawing of maps, and (c) taking of random notes.

The type of material learned varied in accordance with the method of study. Students who were preparing for objective tests tended to (a) learn facts, (b) memorize statements, (c) put emphasis on details, and (d) learn definitions, words, and figures. Pupils studying for the essay test attempted to (a) get a general view of the material, (b) form personal opinions, (c) interpret material, and (d) fix the general outline and then add the details. When studying for an objective test, a student said, "I stuff my memory with as many facts as I think it likely to retain for the required time, until and including the test, and then quickly forget everything except the few points that appealed to me as most important."

Jones (149) stated his belief that instructional emphasis and the student's own efforts are almost certain to follow in the trail of the principal methods of examination used in a school. If emphasis were laid on factual details, the student would naturally turn to underscoring correct items or to listing points on memory cards. If students were graded on the quality and substance of their essays, they would try to improve in this respect, and examiners would take more interest in aiding development along this line. Jones contended that the essay examination still holds the attention of the average professor in the field of social science or the humanities. "He is more interested in a whole examining picture, a *Gestalt*, than in separated examining objectives. He is willing to have many facts omitted, but he wants the student's own organized expression, for without expression education is meaningless and the whole mechanism of instruction becomes pedantry" (149:202).

Jones (149) reported that, in answer to the statement, "I think one's ability is far better shown through discussion questions than through short objective questions," 68 percent of the students in colleges which give senior comprehensives, and 55 percent of the superior students in other colleges, answered positively. Alumni taking both types of examinations

offered even more favorable comments on the essay test. The alumni favored the essay because they felt that it was more important to be able to discuss an issue than merely to check it. From a survey made of the examination system of Harvard College, Hanford (147) stated undergraduates favor the "reasoning, speculative type of examination questions."

Hanford (147) held that questions challenging opinion, presenting a problem, or calling for critical comment, lend themselves to the essay method of discussion. In speaking of the General Examination System of Harvard College, he stated that the examiners prefer the essay test which involves analysis and explanation, opinion, or evaluation of propositions. The essay test has been found by them to be suitable for (a) measuring the student's ability to use and correlate knowledge, (b) discovering how far the student has grasped the meaning of the material studied, and (c) discovering the use the student can make of the material.

Kandel (150), offering an argument in favor of the essay type of examination, said that the essay test provides better evidence of the understanding, reasoning, and ability to organize information than do objective tests. An experiment was performed to find the results of the essay and objective test given in the same subject, United States history, to the same pupils. According to these data the essay test proved to be slightly superior to the objective test as an instrument for measuring understanding. Stewart (158) concluded that well-chosen essay-type questions give a teacher a knowledge of the pupil and an understanding of his thought processes that cannot be obtained by any other means.

Raths (154) listed the major objectives of the thirty schools in the eight-year project of the Progressive Education Association. These objectives were classified under eight heads: (a) thinking; (b) interests, aims, and purposes; (c) attitudes; (d) study skills and work habits; (e) social adjustment; (f) creativeness; (g) functional information, including vocabulary; and (h) a functional social philosophy. Of these eight, four called for the use of the essay test, namely, the first, fourth, seventh, and eighth.

Suggestions for Improving the Essay Test

Holroyd (148) suggested that the technics of the essay examination be refined and used in composition exercises and for tests of reasoning, judgment, organization, and appreciation in the case of advanced students. It was further suggested that the essay test be used with other tests, permitting (a) a wider sampling, (b) greater objectivity in scoring, and (c) a comparison of standards. For solving the problem faced jointly by the English teacher and test technician, Stalnaker (157) suggested constructing a test which would test the permanent writing skill of the student. The first step was to make clear what abilities were to be measured. One exercise should not attempt to measure all the abilities; each ability should be measured separately. Short exercises are advised so that there will be examples enough for a dependable measure. Questions should not

be formulated to inspire the students since the object is not to test his inspired creative genius but his consistent underlying ability to express himself. Stalnaker described tests which purport to measure the student's knowledge of grammar and general mechanics and at the same time afford a rough measure of the student's writing ability. The first-mentioned test is the construction-shift test in which a sentence is given the student and he is told to make in it a specified shift in structure. Though not strictly an objective test it is read with a reliability of .98. Two other types are mentioned which can also be read with a high degree of consistency. In the first of these, verbose sentences are to be reduced to as few words as possible without sacrificing essential ideas. The other test consists of short, choppy sentences to be rewritten into a smoothly running paragraph without changing organization or ideas.

Wrightstone (160) said that the essential step in improvement was the omission of questions that test mainly recall of information. He further suggested that the examiner determine the objective or objectives to be measured and devise appropriate questions for each objective. For the scoring of such questions as those asking the pupil to describe, compare, contrast, explain, interpret, discuss, develop, evaluate, and summarize, he suggested the use of scaled samples.

Scoring the Essay Test

Meyer (151) tried grading answers to essay tests in three ways: (a) giving points for correct facts called for, (b) giving additional points for correct facts supplementary to those required, (c) giving additional points for organization. When grading on facts, one point was allowed for each correctly stated fact that was pertinent; organization was rated on a ten-point basis. Intercorrelations between total scores ranged from .83 to .91.

Stalnaker (155) believed that the essence of measurement is objectivity. He referred to evidence that the readers of the College Entrance Examination Board tests can grade papers with reliabilities of over .90 and in some instances over .98. For tests of composition ability, he would eliminate the use of letter grades with absolute literary significance. The exercises should be evaluated with points for definite elements which competent teachers judge to be significant. He felt that such methods would produce reliabilities as high as .95 without a sacrifice in validity. Stalnaker (156) believed also that the use of optional questions is a cause of unreliability in grading essay tests. He said, "Asking all students to run the same race is a feasible step in improving the essay examination."

Possible improvements in the marking of essay tests were offered by Wrightstone (160). The examination should be planned to measure one defined objective of instruction, such as an attitude or interpretation of facts, for which no valid and reliable objective test is available. A definition of the objective should be accepted by all the readers of the examination, and certain standards of measuring values should be agreed

upon by the readers. If the teacher wishes to include several objectives, such as pupil's organization of facts, social attitudes, and neatness, the paper should be graded for one purpose at a time and the grades assigned separately. The teacher or teachers grading the papers should first decide upon the aspect to be marked, then an ideal answer should be formulated, and each part assigned a certain number of points. Wrightstone recommended an eleven-point scale for grading, from 0 through 10.

Regarding the examinations, largely essay, used at Harvard College, Hanford (147) stated, "Through the preparation and grading of the examination by the same persons, by constant and intimate consultation regarding line cases, and by means of the oral examination as a supplement to the written examination for line cases, an attempt is made to obtain reliability and validity of the examinations." According to Thurstone (159), the essay test should be restricted to one or two pages. He suggested that grading can be improved if done with reference to a predetermined list of ideas which shall be regarded as acceptable in the replies and perhaps still other ideas that shall be regarded as not acceptable. Kandel (150) said that it is possible to mark essay examinations with a reliability of .80 or over; they are usually marked with reliabilities from .30 to .50, and .70 or over is rare. Methods should be used to restrict answers to specific questions, and Kandel offered the same suggestions on procedure as those already adopted by the Regents' or College Entrance Examination Boards. These suggestions are: (a) agreement on what questions should be marked for, (b) analysis of an ideal answer, and (c) assignment of a certain number of points to each significant part of a question.

Summary

More use of improved forms of the essay test along with objective tests is recommended in order to attempt a more comprehensive measurement of differing mental functions. Much research is needed to indicate how the essay test may be improved. Almost no literature touches the problem of validity of the essay test. No studies of the "Form A-Form B" reliability of the essay test along lines similar to "Form A-Form B" consistency determinations of objective tests are available. The problem of scoring essay and objective tests is not that of developing a high consistency correlation between two sets of essay scores, or a high correlation between essay and objective test scores over the same material, thus reducing the essay to a form measuring approximately the same mental functions as the objective test measures. The problem involves a low correlation between essay and objective test scores over the same material with high consistency coefficients. Under these conditions each test type would measure mental functions unique to its type and thus decrease the overlapping of the mental functions measured. It seems probable that there is a definite place, need, and use for improved forms of essay tests in the secondary and college levels of learning.

CHAPTER IV

The Improvement of Classroom Testing¹

DOUGLAS E. SCATES

THE IMPROVEMENT of classroom testing seems to lie in the following three directions: (a) a more carefully considered set of purposes for which testing is done; (b) a greatly broadened and enriched set of outcomes which must be measured; and (c) the development of instruments appropriate to the newly created needs. The discussion of these three movements practically fills the testing literature, crowding out much of the former concern over such questions as old-type vs. new-type tests, true-false vs. multiple-choice tests, or instructions to guess vs. instructions not to guess, which until recently held the center of interest. The present concern is with more fundamental issues; the novelty of objective and standardized testing has passed, the surface attractiveness of carefully printed instruments has worn off, and those workers who are now leading the thinking are searching the testing movement to ascertain what fundamental values are there, and what changes can be made to make tests a stimulus rather than a hindrance to further educational progress.

The literature dealing with such topics is primarily of the analytical, argumentative type, based on experience and observation. The problems in such areas do not lend themselves readily to formal research. The present summary will accordingly be made up chiefly of discussion material, with supporting research where available. The present treatment does not deal, except incidentally, with tests of intelligence, personality traits, and the like, as these were covered in the *Review of Educational Research* for June 1938. The term "testing" is used in the broad sense which it is gradually coming to have, including, by implication, all systematic means of gathering evidence on pupil performance.

Changes in Teaching and in Testing

Each generation seems to discover for itself teleological and methodological concepts which it brands as new, or progressive, even though these very ideas may have been formulated and voiced centuries or millenniums earlier. It is difficult to know what is new; most ideas are new only to individuals. It appears however that there are strong movements in education today which are actually affecting practice in conventional schools in a way which heretofore was only talked about, or practiced only in a few private schools. While it would be unreasonable to claim that vitalizing concepts of education are new, we may perhaps say that the verbal expression of these concepts has reached a new level of definiteness and specificity, in contrast to the earlier rhetorical generality.

¹ Bibliography for this chapter begins on page 560.

Contrasting the present situation with an earlier one, Wrightstone (235) stated:

When these [objective] tests were first introduced into the school program, the curriculum consisted very largely of the three R's—reading, 'riting, and 'rithmetic. At this early period in the development of both curriculum and tests, the emphasis was upon a mastery of subject matter. Teachers, parents, and pupils believed that classroom education should be mainly the memorization and recitation of assigned facts and information. The curriculum and its needs, therefore, influenced the kinds of tests which were constructed and used. It is not surprising that practically all of the earlier and older tests measured recognition and recall of isolated facts and information in separate subjects.

Progressive education has arrived at a stage of development, both in curricular practices and in testing, where new objectives and practices in education have created a need for new tests. Compared with the early curriculum and its emphasis upon information and facts, newer practices in progressive schools have created new objectives of instruction. The project technique and the integrated activity unit-of-work have opened up entirely new kinds of classroom behavior and objectives.

Other writers have pointed to the same trend. Changes in testing become necessary because of changes in teaching. Lee (193:465) commented: "Standardized tests which measured merely a knowledge of facts in literature, history, or geography were constructed for an elementary school whose central purpose was the mastery of a given body of subjectmatter. There is no more reason for using such tests today than there is for using books which were written for that type of school." Cook (175:471) stated that while "many of the earlier standardized tests . . . have tended to encourage and perpetuate this type of teaching and learning, our most competent test builders are striving with a large degree of success to construct tests which will discourage this memoriter type of teaching. The best of the newer tests avoid the use of stereotyped textbook language, require the application of laws and principles in new situations, emphasize understanding and the relationships of ideas rather than mere verbal learning, and stress the functional value of what has been learned, rather than the subjectmatter itself. Such tests are freed from the specific content of textbooks or courses of study, and measure rather the intellectual development which should be achieved through that content."

Hopkins (188), dealing with the matter in terms of fundamental, more or less philosophical, terms, pointed out that the measurement movement up to the present has been based on assumptions which grew out of "conceptions of education crystallized in America about 1900," the most important of the assumptions being:

1. A social heritage organized in subjects in which uniform learning of minimum essentials is required of all.
2. A control by the teacher of what is to be learned and how it is to be learned.
3. A fragment of subjectmatter can be adequately measured in isolation from the larger whole of which it is a part.
4. A satisfactory measure of the learning of the individual can be obtained through some form of verbal test.

After elaborating these and other points, Hopkins (188:204) concluded: "These assumptions contain no relationship to the internal balance of the individual; they do not consider the adjustment or maladjustment of the individual in his environment; they are not applicable to a variable learning situation in which uniformity has been removed both from the materials and the controls. . . . The problem of measurement . . . is to build new assumptions and technics that center measurement in the interaction of the individual with his environment and recognize desirable changes in each."

It would appear that there are at present forces which would support an advance in testing. These forces are expressing themselves in new conceptions of the relation of testing to education, and in new conceptions of what education should accomplish. We shall examine these two areas before considering directly the new tests to which they are giving rise.

Lessening Emphasis upon General Standards

The appearance of the new-type test, leading quickly to standardized forms, was a matter of sufficient moment to require a reconsideration of educational theory and the development of an educational philosophy which would incorporate the new instruments into a unified program. The last ten years have afforded gratifying progress in this direction.

In the absence of an adequate philosophy, and under the stress of increasing demands for efficiency in process and product, the natural thing to do was to emphasize standards. That was the emerging thought in industrial production; the ideology carried over into teaching. It dominated practice and thinking in the 'twenties; it has prevailed in practice during the 'thirties, and probably will in the 'forties. In the literature, however, a new emphasis has been growing.

Lee (193:465) stated that "many of the educational crimes which have been committed in the past twenty years have been due to a wrong concept of the purpose of measurement." Beers (165:578) wrote that "there appears to be no lack of interest in the giving of the tests; but what to do with the results, once they have been assembled, is shrouded in black mystery for many teachers and school authorities." We are well acquainted with the conventional uses that have been made of test results.

Wood has been one of the most consistent critics of these conventional uses. Writing in the first cycle of the *Review of Educational Research* (February 1933), he made the somewhat shocking point that raising the scores of pupils on a test, through increased learning, was not the end to be sought, that for many pupils such an increase was immaterial, and for some of them it was undesirable. He was writing of algebra, but his philosophy was general. He criticized the widespread use of tests for administrative purposes—marking, promoting, classification, credit, admission, retention—and emphasized the need for using tests for a continuous study of the individual, and for adapting both the curriculum and the instructional methods to the needs of that individual. Wood (228:9) wrote: "Tests should first of all tell

what a pupil should *try* to learn—not *how* he may be cajoled, persuaded, or insidiously coerced into learning. . . .”

Lindquist (196:73) conceded that “undue emphasis upon *average* test results, upon school-to-school and teacher-to-teacher comparisons . . . may cause the teacher . . . to neglect the interests of the pupils, and to be concerned instead with subject matter objectives and with higher average scores for their own sake.”

Other writers (182, 190, 200) joined in decrying the use of tests to enforce standards. It may be pointed out that the technical literature has contained much evidence, over a period of time, that the norms themselves, of various standardized tests, are open to considerable question. The trend of thinking seems not to have been influenced by such material, but rather by an analysis of purposes.

Putting Our Knowledge of Individual Differences To Work

Full realization of differences between individuals may be regarded as a byproduct of measurement; probably the incorporation of the facts of such differences into a working philosophy of education will be accomplished at the same time that the potentialities of measurement are assimilated. The following excerpts suggest certain uses of test results as contributing to, and as consequent upon, an understanding of individual differences.

Charles W. Eliot, former president of Harvard University, is quoted by Wood (229:229) as saying: “Uniformity is the curse of American schools. That any school or college has a uniform product should be regarded as a demonstration of inferiority. . . . Every child is a unique personality. . . . Uniform programs and uniform methods of instruction . . . must be unwise and injurious—an evil always to be struggled against.” That was in 1892.

Speaking of standards as something to be gotten away from, in the direction of individual adaptation, Wood (228:9) himself said: “Even if some do learn the prescribed minimum under the pressure of ‘remedial’ treatment, the results might not be worth the effort. Indeed, if we consider the attitudes of despair, the feelings of inferiority, the habits of dependence, the frequently temporary and superficial, if not fictitious, character of forced learning, and the loss of opportunity and time for learning something that is within the comprehension and interest of the pupil, it is not by any means certain that the efforts to ‘remedy’ children up to prescribed minimum are not positively harmful.”

Speaking on the positive side, the same writer (229: 233, 234) claimed: “We have no right to ask or encourage any pupil to learn a subject unless we have reasonable grounds for believing at least two things: first, that the pupil has the necessary ability or capacity to learn that subject; and second, that learning that subject will, all things considered, tend to make him a better and happier citizen more surely than would anything else that

he might do with his energies at that time and place. . . . The teacher's duty to learn the child is prior and paramount to the duty to teach the child. . . . The objectives of education in our public schools are accordingly: first, to try to ascertain the intellectual, personal, and social needs of each individual child; and second, to try to meet those needs, whatever they may happen to be."

Tyler made the same points: "In appraising the progress of each student adequate consideration should be given to his individual pattern of desirable educational goals. The objectives of the course do not represent points to be reached by all students but rather directions in which students may progress. . . . When objectives are conceived as uniform goals to be attained by all students, teaching tends to become an attempt to maintain a lock-step march to these goals, while testing is used to discover whether the students have reached the goals. Such a conception omits the vast array of facts regarding individual differences. Individuals differ not only in rate and methods of learning but in interests, needs, and potential abilities. How far each student may be expected to progress toward any objective varies with his needs, his interests, and those abilities of his which are involved in this progress. . . . In this sense, objectives become individualized as do teaching and learning procedures.

"It is much easier to accept the median achievement of a group of students as the goal for each person than it is to try to formulate a suitable individual pattern of goals. . . . The proper conception of evaluation eliminates purely mechanical appraisal and substitutes judgment and thoughtful consideration. This does not imply intuitive appraisal but demands valid judgments based upon the careful collection of comprehensive evidence regarding student progress" (187:13-14). For more detailed statements one may read Voelker's suggestions (225).

Adjusting the Learning Load

Connor (174:291) reported evidence that pupils who are working beyond their capacity are the chief sources of behavior troubles. "The pupils who showed the higher incidence of behavior difficulties also showed higher achievement in relation to mental ability. In other words, the slow pupil, working with a curriculum somewhat too difficult for him, tends, first, to respond by excessively hard work and relatively high achievement, and later, by other forms of less satisfactory social behavior calculated to gain attention." When the learning load was adjusted to the ability of the pupil, a more even development of character and personality throughout the pupil population resulted.

In attempting individualization, Cook (175:473) reported the determining of capacity by other than intelligence tests. "Intelligence tests are not an integral part of the testing program in the laboratory schools [of the Eastern Illinois State Teachers College], because no purpose has been found for them that is not better served by tests of achievement or of

specific aptitude." Cook recognized eight areas of special capacity, and attempted to obtain measures of capacity in each of these rather than to use a general intelligence test which represented some sort of an average of all the capacities, with an unknown weighting.

Wood (229) listed ten criteria for individualized instruction. The literature written by those not intimately connected with the testing movement contains many articles urging greater individualization of instruction.

Codified Statements of Testing Purposes

In the preceding cycle of the *Review of Educational Research* Sangren (216) listed six purposes of testing: (a) prognosis, (b) surveys, (c) diagnosis, (d) instruction (including grouping and marking), (e) experimentation and research, and (f) guidance. Rath (212) gave the following five purposes: (a) appraising specific types of achievement for individuals, for groups, and for schools; (b) reporting to children, parents, other educational institutions, and to employers; (c) appraising continuously the methods and materials employed in teaching; (d) obtaining a comprehensive picture of an individual or of a group; and (e) experimentation. The list is not exhaustive.

Jones (190), writing on achievement in literature, mentioned six purposes for evaluation:

1. Assisting the individual student more effectively to achieve, through his study of literature, the larger educational objectives with which he has identified his own purposes.

2. Making the student conscious of desirable objectives of education which may be enjoyably achieved through the study of literature, but with which he has not yet identified his own purposes.

3. Giving the teacher a clearer understanding of the student's present personal and social needs, to the end that he may more competently direct that student's future education through literature.

4. Discovering to the teacher the general backgrounds and abilities of a given class to the end that he may select with greater appropriateness the literary materials which will prove most effective in achieving the classwide objectives of education.

5. Giving the teacher a sounder basis upon which to make recommendations to others for the future or supplementary direction of the student's education.

6. Furnishing the teacher with tangible evidence that will be useful in explaining the student's literature program to interested parents.

This list suggests that the teacher is not simply teaching literature, but that he is striving to do his part in contributing to a general education, and is using literature as the medium. Measurement aids him in specific ways.

Cook (175) gave a somewhat elaborate list, the main points of which were: (a) to redirect the curriculum emphasis; (b) to provide a basis for educational guidance of pupils; (c) to encourage pupils to put forth their best efforts; (d) to direct and motivate supervisory efforts; (e) to provide a basis for the marking and promotion of pupils; and (f) to build and maintain desirable skills, abilities, and understandings. "Test

periods are considered as very effective learning periods as well as testing periods." Subpoints given under (b) are: predicting pupil performance; classifying pupils; diagnosing learning difficulties; setting up standards of pupil performance; discovering special aptitudes; discovering pupils in need of guidance and individual consideration; and measuring pupil achievement. The uses include aptitude, diagnostic, and general achievement tests; intelligence tests, as previously stated, are not regularly used.

Lee (193) listed five uses of intelligence tests, six uses of informal (teacher-made) tests, and eight uses of standardized tests. Lee and Segel (195) obtained questionnaire responses from 1,600 high-school teachers and reported that only two purposes were each listed by more than half of the teachers—to aid in determining marks and to discover topics that need to be retaught. Other uses which were frequently mentioned are: (a) to discover the quality of work a pupil should do; (b) to discover what topics should be taught; (c) to stimulate pupils to do better work; (d) to evaluate strengths and weaknesses of instruction; (e) to aid in determining the future educational program of the pupil; and (f) to classify pupils into ability groups.

Beers (165:579), writing primarily for the college level, said: "The majority of 311 colleges reporting on their most valuable experience with tests cited vocational guidance as first. . . . Test data furnish evidence for gauging the amount of class work to be carried, for encouraging superior prospects in undertaking senior college work, for making scholarship recommendations, for determining the amount of work for self-supporting students, and for stimulating both faculty and students. These and other uses indicate that testing and guidance, far from being a mere formality, serve a much felt, practical need." Referring to a certain college, he added: "Fitting education to the individual and not the conventional reverse procedure is looked upon as a major responsibility of the faculty." A digest of test uses (163) has been prepared, covering the uses reported by colleges.

Relation of Testing to Teaching

Cook (175:470) stated: "Tests are both powerful and dangerous instruments. . . . Every testing program has far-reaching effects on the curriculum, on the objectives and methods of instruction, and on the study habits of the pupils. . . . Since systematic testing tends to focus instructional effort upon the characteristics measured by the test, it is highly important that these include all the desired outcomes in instruction."

Lee (193:466) reported: "The writer has had the opportunity to observe the effects of two types of testing programs. In one case tests of facts and skills were given at the end of the year by a state department of education. In the other case tests of skills were given at the beginning of the year and were selected by the local school authorities. The first procedure resulted in cramming by the pupils and in much cheating on the part of teachers.

In the system that gave tests at the beginning of the year, the teachers were vitally interested in analyzing the needs of each pupil. There was no feeling that the teacher was being judged; the attention of everyone was focussed upon the needs of the child."

Realizing that the customary interest in comparing averages of different classes has consequences which "are unfortunate, particularly because they create in the classroom teacher an attitude toward the tests which directly interferes with the effective use of the results in pupil guidance," Lindquist (196: 72, 74) nevertheless feels that "these must be recognized as quite legitimate uses of test results," and regards the matter as a problem of the administrator and not of the test-maker. Elsewhere he stated (197:484): "The standardized test should be looked upon solely as a *measuring* instrument, and not as a teaching instrument or as an abbreviated course of study."

Stalnaker (219: 38) stated: "Fruitful theory may result from considering teaching and measurement as completely separable and independent functions. But practically tests do have a direct bearing on the curriculum. The English test which has a bad influence on the teaching of English is not a good test."

Raths (211: 91) wrote: "Emphasis should be placed on the fact that evaluation is not something that comes at the end of teaching. . . . The formal tests are to be given neither at the end nor at any specified time, but should be an integral part of the teaching. They are given for the sole purposes of diagnosing student difficulties, measuring growth, and affording teachers an opportunity to do guidance work. The exercises included in any one particular test are either similar to the ones students meet in their daily school experiences or of the kind that serve as a highly reliable index of the achievement of students in the everyday classroom situations." This position emphasizes an instructional viewpoint, in contrast to an administrative one.

Foreseeing the ultimate effects of a test on teaching, McCall and his collaborators (198: 424) reported special consideration of this point. They said: "It was important, also, that the test be scrutinized for the influence of every question upon those who would read it or give it or answer it—child, teacher, superintendent, school board, publicist—that the test be filled with suggestions for better aims, better methods, better activity, and that the language of the test suggest concrete ways of becoming better members of society, better friends, better thinkers and appraisers, better leaders, followers, and cooperators, better learners and teachers."

Brownell's regard (168) for the influence of test content upon instruction is indicated by the criteria he would employ in selecting tests: (a) Does the test elicit from the pupils the desired types of mental process? (b) Does the test enable the teacher to observe and analyze the thought processes which lie back of the pupils' answers? (c) Does the test encourage the development of desirable study habits? (d) Does the test lead

to improved instructional practice? (e) Does the test foster wholesome relationships between teacher and pupils? The last three of these are seen to stem directly from an interest in the reaction of the test on instruction, and the first two contribute to keep the teacher from being misled by the results. Brownell further said: "It should be stressed that in the practical enterprise of educating children, teaching and learning are inseparably united with measurement. . . . A test is good if it furthers sound, economical learning and advances the quality of instruction" (168: 485).

Review of Purposes of Classroom Testing

The multitude of varying claims and statements represented by the material cited present a problem of interpretation. The classroom teacher recognizes the commonsense necessity for carrying his pupils along far enough in their learning so that they can fit into the system of schooling at the end of the year. He is deluged with statements in the literature that goals, curriculums, and progress should be individualized and broadened far beyond the usual limits assigned to subjects. He cannot do everything, or please everybody. How shall he chart his course?

The answer, as indicated earlier, awaits the crystallization of an educational philosophy which is adequate for the presentday problems of education. The ultimate resolution of the conflicting interests cannot be clearly foreseen. It may be, however, that our thinking will sooner or later settle upon lines somewhat according to the following.

We have been thinking of education far too simply. We cannot continue long to ignore the facts of differences in background, learning rates, and ultimate learning levels of children, or the host of factors in their environment which affect (retard, accelerate, direct, or complicate) their learning day by day, and which may abruptly terminate their formal schooling before they have reached the limits of their mental capacity. Nor can we slight the complicating emotional factors that result in, and result from, formal learning difficulties. Such differences have been attested thoroughly, over a considerable period of time, in the educational, psychological, and sociological literature.

True, schools have tried a great many adaptations in the light of these differences. Teachers and administrators who are close to the situation recognize the great differences, and make some concessions to them. But the facts have not yet worked themselves through a consistent philosophy. It is still conventional for a school survey to compare a city school system with "the norm." Administrators still compare schools and classes and teachers on the basis of test results. Only recently the schools of a large city were listed in the newspaper in order on the basis of their average reading scores in a particular grade. We recognize differences in children when we center attention on them, and promptly drop the facts from our minds when we think of closely related matters. We still think of education far too simply.

If we are serious in suggesting individualization of goals, of rates of progress (they occur in spite of us), and of learning experiences, the administrator will have to drop entirely the whip hand he holds over the teachers in terms of comparing their classes with "the norm," with other classes, or with any other arbitrary quantity. He will have to obtain his evidence on the efficacy of instruction from other sources; or he will have to draw his conclusions from a multitude of different kinds of tests, covering a variety of outcomes such as administrators seldom think of realistically. Instead of being content with one factor—achievement—he must obtain evidence on a variety of forms of capacity, on a variety of previous and current environmental factors, on a variety of personality (emotional, attitudinal, and other) traits, and, in addition, must expand the evidence on achievement to cover a breadth of developmental aspects such as we are only slowly able to analyze out of the totality of what constitutes a well-educated person. And it seems probable that these many lines of evidence will need to be expressed as amounts of change, rather than as cross section values. An appraisal of teaching or learning that is fair to teachers and to pupils is probably too complicated for an administrator to make on the basis of test results. He should seek other means (182, 226).

Once administrators, including school surveyors, sense the complexity of education, the teacher will be freer to work out an instructional philosophy. The time has come when we should cease to be primarily interested in comparing one child with another, one class with another, or any class with a norm. We should be primarily interested in comparing each child with himself, with his past record, and with his potentialities. To center attention elsewhere is to miss the point—to miss the service which tests can render. If lateral comparisons are made as a secondary matter, they should only be given consideration when there is evidence on enough other factors to warrant a conclusion. Such evidence is not easily obtained; it requires much more than formal testing.

Large city school systems enrol pupils with all degrees of capacity, living in all sorts of favorable and unfavorable environments, with all sorts of personality mechanisms. Where is the public school system that has frankly and honestly worked out its course of study in the light of these differences; that suggests to each grade teacher the variations in each subject that should be made for pupils of different capacity groups, having different backgrounds and different prospects; that furnishes *differentiated* norms for such pupils, so that the teacher can use them as a guide to check himself and the pupil against; and that holds up before teachers the ideal of a broad education, as contrasted with the type of achievement called for by a common test battery? We cannot expect the teacher to solve all of these problems for himself and do a perfect job of it.

Many of the writers on individualization and guidance, in the testing literature, are concerned with the high school and college. It is easier to "guide" a pupil *away* from a course in plane geometry, than it is to "guide"

him *through* the tool subjects. The elementary-school teachers face a different problem. Their problem is to see that the child attains a level of ability in reading, arithmetic, spelling, language, and fundamental understandings in the social studies that will be regarded by him in his later life, and by society, as representing the best distribution of learning opportunity in the elementary school. The tool subjects cannot be slighted; but neither should pupils be very greatly worked beyond their capacity, and neither should slow pupils be denied variety and breadth.

Individualization calls for a restudy of what should be regarded as minimum essentials in the tool subjects for each different capacity group, for each different number of years in school. Such curriculums must be viewed vertically, from the primary grades up, instead of being thought of as minor departures from the standard curriculum for any grade. And educators must look through the eyes of the dull child and of the bright child, on their present worlds and on their future worlds in conceiving the proper curriculums.

From such a perspective the ordinary use of the commercially available standard test, with an emphasis upon comparisons of one pupil with another, and of the class average with the norm, appears for what it is worth (200). Viewed in the light of the broadening objectives which educators are coming to recognize, our conventional procedures dwindle still further in significance.

We still think about education in too simple terms, and so long as we continue to do so, testing will furnish results of doubtful benefit.

Broadened Conceptions of Educational Objectives

"Probably no other factor in modern education has had more to do with a re-definition of the aims of education than has the testing movement. . . . Educators have re-defined the objectives of education in social terms, and some of them—particularly the supervisors of instruction—have demanded that the orgy of testing for knowledge and skill cease." Thus wrote Connor (174: 290). It was pointed out earlier that educational practice was apparently changing, and that test design and use was following. We shall here consider the apparent changes in objectives of education, some emanating from an advancing curriculum philosophy and some forged by the necessity of adapting testing instruments to a greater variety of important outcomes.

Leary (192) reported an analysis of 1,660 recent courses of study, indicating that 66 percent of them include among their objectives "the development of desirable attitudes, appreciations, and understandings." Samples of some of the objectives are quoted. The findings are heartening.

The Evaluation Staff in the Eight Year Study has divided desirable outcomes into the following ten areas (211:90): (a) aspects of reflective thinking; (b) interests, aims, and purposes; (c) attitudes; (d) social adjustment; (e) creativeness; (f) study skills and work habits; (g) vital

information; (h) appreciation; (i) social sensitivity; and (j) functional philosophy of life. These areas are stated somewhat more fully. They are given elsewhere by Rath (212, 213) as eight areas, with (b) and (h) combined, and (d) and (i) combined. Wrightstone (235) listed six objectives and Reene (215) four objectives which would fall under the above categories.

New York State recently adopted a revised list of cardinal objectives (203, 233) for elementary education. The list contained six objectives, stated in broad terms. Eginton (179) listed 21 areas, each with subdivisions. McCall and others (198) included 19 different areas in a test they recently constructed, which is only one of a set of four parallel tests. Other writers also contributed to statements of objectives which should be measured (182, 224).

Examples of Newer Measuring Instruments

The expanded objectives have afforded a challenge to a number of workers in the testing field, and a variety of means of obtaining evidence has been devised and experimented with. In attacking the problem, these workers have not been limited by preconceptions of what form the instrument should have, but have taken recourse to various means, such as anecdotal records, checklists, ratings, observer-diary records, questionnaires, informal reports, and interviews. Some of these instruments or procedures are ready and available for general use; others are still in preliminary stages. As illustrations of developments, the following references are given.

Rath (212) listed likely means of obtaining evidence on the ten areas of the Evaluation Staff. More recently, Rath (213) described the application of ten tests to a school system, giving illustrative samples from the tests. In another place, he (211) reported that instruments are available for help in the evaluation of certain aspects of all ten of the fields previously outlined. He described in considerable detail five of the tests. Further discussion of the development of these tests is given elsewhere (176, 214). Other contributions of the Evaluation Staff are given in references cited in the section which follows.

Wrightstone (234) showed how data can be gathered on each of the six new objectives of elementary education adopted by New York State. He (232) also reported the application of new instruments to conventional and experimental schools. Diederich (177) listed a variety of observational records and other report forms useful in gathering evidence. Zahn (237) described values of the anecdotal record. Hopkins (188) listed a number of records that should be kept.

Various new developments in testing were reported by Alschuler and Hattwick (162), Barthelmess (164), Eberhart (178), Buckingham and Lee (169), Ginsburg (184), and Ralph (209). Ellingson (180) reported on the benefit to the faculty of working on the development of an art

scale. He said that "the most significant single contribution of this experiment" is the "major change in our attitude toward our own objectives." Stalnaker (219) discussed developments in measuring English compositions.

Evaluation in the Eight Year Study

As already suggested, the Evaluation Staff, under the leadership of Ralph W. Tyler, has been active in stimulating teachers to analyze and formulate their objectives in specific, concrete terms, and also in producing instruments for evaluating pupil growth along the lines of these newer objectives. The refinement of objectives and the corresponding instrumental developments have been covered in the two preceding sections. It remains here to indicate briefly the structure of this organization.

Five years ago 280 colleges and universities agreed to waive the usual entrance requirements for graduates from thirty selected secondary schools for a period of eight years, as an experiment. One of the conditions of the agreement was that during this period the secondary schools would develop means of obtaining and transmitting to the colleges information about each student so that the colleges would be able to understand the needs of the student and to provide satisfactory guidance for him. The administrative aspects and conditions of the experiment have been described by Aikin (161) and others (182).² The problem of evaluation, and the steps taken, have been outlined in various articles, by Tyler (222, 223), Rath (212, 214), and others, and are evident in various progress reports of work (167, 207, 211, 213, 221).

The philosophy of the Evaluation Staff is set in Tyler's words (222: 413) as follows: "Evaluation is not limited to the giving of examinations. It involves the collection of any pertinent evidence which indicates the degree to which the school is attaining its objectives; that is, the degree to which the desired changes in pupils are actually taking place. . . . Instruments of evaluation include observations of pupils, records of their activities, products which they make, tests which they take, and other procedures for noting their reactions and their development. The kinds of appraisal instruments needed depend upon the kinds of changes in its pupils which the school seeks to facilitate—that is, upon its objectives."

Elsewhere Tyler (187: 10-11) wrote: "The customary method of analyzing a course as a preliminary step to making examinations has been to analyze only the content of the course. The definition of objectives in terms of expected behavior differs from the analysis-of-content method. . . . On the usual basis of test construction it would be assumed that the student is expected to remember these descriptions. An examination would then be constructed which would disclose whether or not the student remembers the details of these experiments. In contrast, a definition of objectives in terms of student behavior does more than indicate the content to

² Numerous articles on the project are listed in the *Education Index*, since 1932, under the head, "Progressive Education Association, Commission on the Relation of School and College."

be covered. It defines the reactions which a student is expected to make to this content." This distinction, which permeates the work of the Evaluation Staff, is one of the notable contributions to modern testing. It removes the concept of testing from the confines of memory responses; it directs attention to the broadened field of educational objectives as definitely as attention heretofore has been centered on memory. This emphasis, together with the statement previously quoted concerning the variety of instruments contemplated in an evaluation program, should go a long way in removing the distrust voiced by McGaughy (201: 380): "Most of the things that can be measured by our present tests, or any that can be constructed for objective use in the future, are relatively trivial and unimportant in the program of a good elementary school."

The work of the Evaluation Staff has been outstanding for the sincerity, the courage, and the resourcefulness with which intangible objectives have been defined and means of measuring them sought. The evaluation study may well prove to mark a turning point in the history of educational measurement.

Summer workshops—The Evaluation Staff has called in teachers singly, or in groups, from the various secondary schools to work at the headquarters office. In July 1936, the summer workshop was inaugurated at Ohio State University, to which teachers from the thirty secondary schools in the Eight Year Study were brought for discussion of evaluation. At that Workshop, in the one held in Bronxville in 1937, and in the five Workshops conducted in the summer of 1938 (in Bronxville, Nashville, Ann Arbor, Denver, and Mills College), new-type tests were worked out cooperatively by teachers and test technicians (207). Plans for 1939 contemplate the affiliation of these workshops with large universities. The work has been sponsored by the Progressive Education Association, with the aid of grants of funds from the General Education Board.

Testing at the College Level

The colleges have been active in developing and trying out new testing instruments and procedures. Much of this work is reported in references already cited in connection with earlier topics in this chapter. We shall here call attention only to a few publications representative of the work going on. In a report edited by Gray (186) five institutions report their examination programs, and the methods of improving examinations are described in separate chapters by three institutions. An appraisal of the work, uses of results, and needed research, are all dealt with. The cooperative test service is described. Other reports of college testing are made by the American Council on Education (163, 187), Bergstresser (167), Cheydleur (172), Eurich (181), Gerberich (183), Gore (185), Kent (191), Oppenheimer (204), University of Chicago (173), University of Minnesota (202), Valentine and Wenrick (224), and Wert (227).

CHAPTER V

Developments in Test Scoring and Analysis¹

FRED P. FRUTCHEY

THE WIDESPREAD^{*} USE of tests as a basis for understanding the needs of pupils has resulted in deep inroads on the teachers' time, or in considerable expense and delay, largely because of the time-consuming task of scoring the papers and analyzing the results. To meet this problem there have been a number of recent developments; earlier ones were reviewed by Lindquist and Maucker (253).

Devices for Identifying Correct Responses

Most of the devices which have been developed serve to identify rapidly the responses which are correct, as a preparatory step to counting. The "self-scoring" tests which appeared commercially some fifteen years ago were of this type. A number of portable machines for indicating on a special answer sheet which responses are correct, appeared some years ago, but have had little or no mention in the literature. Stenquist (265, 266) and his staff developed a procedure for doing this work on mimeograph machines. The pupil's response is made on a sheet having different spaces for different answers to a question; this sheet is then run through the mimeograph machine, which indicates, by printing, those answers that are in the correct places. Stenquist (266) reported that, "after a few hours' practice, operators can score, with sufficiently perfect precision and virtually no spoilage, at the rate of from 28 to 35 tests (answer sheets) per minute."

For hand use, Manuel and Knight (255) developed a stencil containing marks at appropriate spaces at the edges of windows. When the stencil is placed over the pupil's test paper in proper position the coincidence of the pupil's marks on the test and the stencil marks indicates correct answers, which the scorer counts. The chief advantage of this device over the usual scoring keys is that here the scorer needs to keep in mind the matching of only two symbols.

Toops' method—In connection with the Ohio State University Intelligence Test, Toops (271) developed a unique scoring procedure. This test, now in its twentieth edition, consists of a test booklet containing the questions, and an answer pad of three response sheets with a special guide sheet on top of them. These sheets are sealed together and the student makes his response by punching with a pointed stylus in the appropriate place, making his selection according to the guide sheet on the top. The second, third, and fourth sheets, all of which are punched simultaneously, have wrong-answer spaces covered with black so that the correct punches are in

¹ Bibliography for this chapter begins on page 564.

white spaces. These sheets are separated, after the testing, by trimming around the edges.

The counting of the correct responses proceeds at the rate of about one test a minute, the test covering 150 questions and requiring about two hours to take. The advantage of the three different response sheets is that they can be given to different persons to score (count), thus providing a check on the work. The sheets may in fact be shuffled and passed out to the persons who took the test, since the response sheets contain only a serial number in place of the person's name. Each person can count three sheets, which may then be reassembled and checked against each other for agreement. While the procedure requires a specially prepared set of material, it does not call for a special machine in connection with the scoring.

The International Test Scoring Machine

The most outstanding development in the scoring of objective tests is the Test Scoring Machine developed by the International Business Machines Corporation (244, 247, 248). The imperative need for such a machine to facilitate large-scale testing was sensed by Ben D. Wood in connection with over 200,000 tests given in the Pennsylvania Study in 1928. The necessity of extensive research in the design of such a machine soon became apparent, and the problem was presented to the International Business Machines Corporation. After two years of research, an experimental model was placed on the market in 1935. This model has been carefully studied and improved down to the present time.

The machine is based on the electrical conductivity of a graphite mark of a lead pencil. Responses are made in spaces indicated on a specially printed response sheet; special pencils are advised, but are not a requisite. The response sheet is then dropped in the scoring machine and a pointer indicates the number of correct responses. The response sheets can be prepared in a variety of forms, adapting them to various types of question and test situations. Different weights may be attached to different answers, as for the Strong Interest Test. According to the Corporation, "the machine records the raw scores in terms of the number of right answers, number of wrong answers, rights minus wrongs, rights minus a fraction or multiple of the wrongs; or any of these scores may be recorded in terms of percentage. Three part-scores and the score on the total test may be secured at one operation" (247:8). A unit for item analysis is being developed.

This machine thus not only does away with the necessity of counting but also with the hand manipulation of rights and wrongs after counting. Operators of average ability are reported to score from eight to fourteen tests per minute. In the New York Regents' Inquiry into the Character and Cost of Public Education, 402,600 tests were scored at an average rate of 15.6 tests per minute. Other studies of the machine have been reported (262, 276).

Accuracy—Stray marks or light marks on the response sheets sometimes fail to register on the machine. Studies of accuracy, by check-scoring the papers, showed an error of 0.15 percent in the number of items, and an error in 2.6 percent of the papers (244, 276).

Artificiality—If a test scoring machine, or other device or procedure, requires a form of recording which is unfamiliar to the pupil, the responses will not represent his behavior (knowledge) under other more natural conditions. While this fact must be recognized as a possible criticism of the use of response sheets for this machine, one must also recognize that all paper-and-pencil tests contain certain elements of artificiality, and that the difficulty with the special response sheet lies more in its unfamiliarity than in its inherent form. While this matter needs further study, and special norms may be appropriate where such sheets are used, the matter does not appear from the present studies to be serious. A coefficient of correlation of .99 was found between the conventional method of scoring 90 students' free answers to a general mathematics test and the machine scores based on the special response forms.

The Cost of Scoring

Scates (259, 260) reported that the cost of ordinary scoring was 50 percent of the cost of purchasing, giving, and scoring a standard test battery, where all operations were paid for, and 10 percent of the scoring was checked. Studies of the cost of counting identified correct responses, previously described, do not seem to be reported; but if Toops' procedure were followed, the money cost would obviously be little, or nothing. With reference to the use of the International Test Scoring Machine, it has been estimated that its use saved \$15,000 in the Regents' Inquiry in New York State. One important factor in possible saving is the use of the response sheets in lieu of marking up test booklets. One city school system reported saving enough on one order of tests to pay for the rental of the scoring machine for two years (244).

Objections to Scoring Machines

The development of test-scoring devices in the form of stencils and machines, particularly scoring machines, has met with some objections and criticisms. The chief objection is that a scoring machine is but a further step in mechanizing education. There is a tacit assumption that the machine interprets the student's answers and relieves the teacher of thoughtful consideration of the individual student. Obviously the machine can only perform a mechanical process and cannot interpret (262, 266). The degree to which a part of the process of testing is mechanical provides a place for the use of machines and hence for economy of time and labor. The most important parts of the evaluation process, however, involve human judgment and thought in constructing and administering tests, and in interpreting the results. In the testing process human judgment enters, in de-

ciding for what aspect of development to test, what kind of evidence of behavior is indicative of that development, how to get a record of the behavior, how to bring together all bits of evidence in the test record for possible interpretations to be made, how to weight each bit of evidence numerically, how to interpret the numerical measures, and what further educational experiences to prescribe. These problems cannot be decided by a machine; but there is a place in the process which involves computation, and a machine can perform the necessary computations at this point in the process.

Various Scoring Studies

A number of studies have reported on special phases of scoring. Conrad (242) and Sims (263) dealt with the scoring of rearrangement tests so as to allow for chance. Zerilli (277) and Conway (243) discussed the scoring of multiple weighted items, such as the Bernreuter Personality Inventory. Klar (250) studied the rating of pictorial compositions; Strong (268) reported on the scoring of his interest test by the use of the tabulating machine; and Lawson (251) and Bush (240) reported respectively on scoring subjective tests and true-false tests.

Statistical Analysis of Test Scores

Hollerith tabulating machines have been used to a large extent in the analysis of test results on a large scale. Such analyses are reported by Wood (275) on college tests, by Lindquist (252) on high-school tests, by Strong (268) on vocational interest tests, by Terman and Merrill (270) on intelligence tests, and by Kelley (249) on free association test results. These reports appeared in a general book on applications of the punched card method (239).

Toops (272) reported on the use of the punched card method in the analysis of questionnaire data and methods of constructing questionnaires for machine analysis. He pointed out that the machine is a valuable stimulus to the researcher because he must think through the whole process in preparing data-recording forms, even to the point of deciding upon tables to make, and possible interpretations. He must decide ahead of time what to do with unexpected responses. According to Toops, "the machines act mechanically, blindly, and unintelligently—although with an accuracy, speed, and seeming intelligence *for those operations for which they are set*, which to the casual observer, appears superhuman, as indeed it is in fact."

Interpretation of Test Scores

Stencils, or similar devices, for the interpretation of test scores have appeared in at least two publications. Allen (238) published his stencil in a separate volume, to be used as a part of a program of adjustment. The

chart is based on intelligence, achievement, and chronological age. More recently Voas (273, 274) presented reports of a somewhat similar chart, with a chart form designed to aid in the preparation of the chart. The same three basic factors or traits are involved.

Teachers of mature judgment probably regard such devices as suggestive but dangerous. If all important factors were measured, and if all factors were measured accurately, mechanical devices for interpretation would be reliable. But teachers, as well as research workers, know that all measurements must be interpreted in the light of daily observation over a long period of time, and that the results of testing alone, construed in the usual sense, cannot be relied upon to furnish data which are the sole basis for educational guidance. All mechanical schemes for the interpretation of test scores, therefore, must be used against a background of enlightened judgment.

CHAPTER VI

The Educational Measurement Movement in Perspective¹

A. Developments in Educational Measurement

E. F. LINDQUIST

SOME OF THE MOST SIGNIFICANT of recent developments in educational measurement have been neither the direct outgrowth nor the immediate object of experimental research. On that account they have tended to be neglected in reviews of this kind. These developments may be briefly characterized as follows: (a) a greatly increased emphasis upon the use of tests as a means of facilitating individualization in education, or upon the use of tests in educational guidance; (b) a consequent demand for increased comparability in the results obtained from tests; (c) a steady growth in the number and scope of cooperative regional testing programs; and (d) increasingly successful attempts to measure what heretofore have been considered the intangibles in educational outcomes, both for the purpose of improved educational guidance and for more adequate evaluation of current outcomes of educational practices.

Guidance

The increased emphasis upon the guidance values of tests has been reflected in the work of all leaders in educational and vocational guidance. The references to these uses are too numerous and scattered to permit any enumeration or individual summaries of them here. It is now generally conceded that one of the major functions of educational measurement is to enable the teacher, the guidance counselor, and the school administrator to become more intimately and dependably acquainted with each individual pupil, in order that more adequate provision may be made for individual differences in all phases of the educational program. This use of tests is now regarded by many as not only one of the major functions but as *the* major function of tests, to which all other uses should be definitely subordinated and with which no other use should be permitted to interfere (283, 292).

Comparable Scores and Norms

In accordance with this emphasis, increasingly adequate provisions are being made in school practice for the organization and systematic accumulation of test results and other relevant guidance data on permanent cumu-

¹ Bibliography for this chapter begins on page 565.

lative record forms for individual pupils. Recent developments in this area were excellently summarized by Segel (290). These efforts to organize and integrate available information about individual pupils for more effective interpretation and use in guidance have drawn attention to the need for greater comparability in test results. Unfortunately, most of the standardized tests thus far have been independently constructed with little regard to the possibility of their collective use in an integrated guidance program. The norms for these tests have been independently established at different times and under different conditions, each for a group of pupils and schools differing in geographical distribution, in type of organization, and in level of achievement from those used in the standardization of the other tests. Because of these variations, the norms have differed considerably, sometimes by as much as several grade levels, even for tests intended for the same subject. Consequently, when an educational profile was constructed on the basis of percentile or grade norms for a number of these tests, it was impossible to tell to what degree the peaks and troughs in that profile were due to real differences in the abilities of the pupil and to what degree they merely represented accidental variations in the norms provided for the tests. The urgency of the need for increased comparability in test results, from the point of view of educational guidance, was expressed by Wood (287).

In general, high comparability in results for any set of tests can best be obtained by establishing the norms for all of these tests at the same time and under the same conditions, for exactly the same group of pupils and schools. It is here that the cooperative or regional testing program makes one of its most important contributions. Through such programs, it is not only possible to secure highly dependable and meaningful norms on each test individually, because of the size and homogeneity of the population used, but also to establish norms simultaneously on a large number of tests for the same population and to maintain comparability in these norms from year to year. In fact, it now appears that cooperative organization in testing, such as that represented by the Cooperative Test Service of the American Council on Education or by the various regional testing programs, is the only practicable means of establishing norms of this type. This and other advantages of wide-scale cooperative organization in achievement testing were summarized in a bulletin (284) describing the 1938 Iowa Every-Pupil High School Testing Program and are discussed also in the descriptive literature provided for many other programs. The growth of this cooperative movement is evidenced by the fact that some type of organized program is now in operation in some twenty-six states. It appears likely that this trend will continue, and that in the future the great bulk of all testing for guidance will be done through the regional testing program.

In spite of the importance of the problem, relatively little research has been reported on this matter of comparability. A study by Crawford (279),

not hitherto reported in the literature, set forth convincing data on the operation of certain factors, such as chronological age, mental age, grade placement, and school progress in test norms. The results indicated a definite need for much more effective control of these factors in selecting the population for the determination of test norms. Crawford suggested the establishment of norms on groups selected for normality in each of the factors named above, and pointed to the need for much more highly refined norms in most fields of educational measurement.

A scaling technic which is intended to control many of the variables ordinarily present in comparisons of test results is proposed by Flanagan (280). Scores expressed on a common scale are now provided with most of the tests published by the Cooperative Test Service. A score of 50 on this scale represents a score which the average child would make at the end of the particular course tested if he had attended an average school and had taken the usual amount of the subject in question. A Cooperative Test Service booklet containing a complete discussion and explanation of this system of scaled scores is now being prepared and should become available before the publication of this review.

Measuring Intangible Outcomes

One of the most encouraging of recent major trends is evidenced in the numerous, and increasingly successful, attempts to define more clearly and to measure more objectively the attainment of some of the more intangible educational objectives which have heretofore been neglected. A significant proportion of recent contributions of this type have come from the Evaluation Staff of the Commission on the Relation of School and College of the Progressive Education Association. By agreement with two hundred and eighty American universities and colleges, thirty secondary schools preparing students for colleges have been freed from the usual college entrance requirements and entrance examinations, and have thus been able to introduce experimentally certain important modifications in their educational offering. The task of the Evaluation Staff has been to develop procedures by which the changes taking place in the boys and girls in these schools may be identified and by which each school may discover from year to year how well it is accomplishing its educational purposes. The essential features of this evaluation program were described by Tyler (291) as (a) the use of the major educational objectives as the basis from which the evaluation program proceeds, (b) a conception of appraisal which is not limited to tests and examinations, and (c) a cooperative activity in which individual schools working with an advisory technical staff are developing new appraisal instruments where satisfactory instruments are not available.

Some of the work of the Evaluation Staff has been reported by Wrightstone (294, 295, 296). It is hoped that some of the instruments produced in this Evaluation Study may soon be made available for general use.

Numerous other efforts to measure hitherto neglected educational outcomes have been reported in the literature. Frutchev (281) described a cooperative program developing the ability to use a scientific method in college sciences. Buckingham and Lee (278) reported on a technic for testing unified concepts in science. McDowell and Anderson (285) described a test of the ability of pupils to outline. Noll (286) discussed the measurement of the scientific attitude, and Grim (282) described a technic for the measurement of attitudes in the social studies. The students of Remmers (289) at Purdue have been particularly active in developing and applying scales for the measurement of generalized attitudes.

B. Current Criticisms of Educational Measurement

S. A. COURTIS

The measurement movement in education always has been criticized and it is safe to prophesy that it always will be. It should be.

At the turn of the century when the concepts of modern educational measurement were just being formulated, and survey measurement activities were novel, misunderstandings and criticisms were inevitable. The center of emphasis then was almost wholly upon measurement of efficiency in the tool subjects of the elementary grades. Today measurement has spread upwards to the colleges and adult education (299, 300, 303, 305), inward to the measurement of "intangibles" (315), and downward to the preschool child (298, 301). Its purposes are as broad as science itself. But even today, as the influence of the movement reaches new areas and fields, the old conditions of novelty and misunderstanding are recreated in those fields. Fresh critics voice the limitations and deficiencies of measurement (297, 307), and in reply others reformulate, in modern terms, fundamental purposes and warnings (308, 311, 312).

During the past three years opposition to measurement has not been much in evidence in the literature, but under the surface, among the rank and file, there are still dissatisfactions, as those in touch with teachers know (309, 310). It is, nevertheless, encouraging to find that out of one hundred and forty-three persons in administrative positions in our schools, less than ten considered the measurement problem urgent enough to feel that it should be discussed with parents (313). The really vital criticisms do not appear in print *as such*, but take form as efforts to achieve better tests, procedures, or statistical technics. The measurement movement as a whole progresses by these small steps of advance, each of which has a motivating drive in some real dissatisfaction.

Among the severest critics are workers within the movement. Thus, one leader in the field of factor analysis wrote: "A large majority of these papers involve misinterpretation of the factorial methods. . . . If the misapplication of factor methods continues at the present rate, we shall

soon find general disappointment with the results because they are usually meaningless as far as psychological interpretation is concerned" (314). Another statistician said: "Possibly a few would take issue with the first part of this battle cry (that anything that exists at all exists in some quantity); some would deny that all traits are susceptible of quantitative measurement; and many would agree that not all we attempt to measure exists. . . . The entire conceptual basis underlying factor analysis does violence to all that is known about the processes of growth and development. . . . When as sometimes happens factors wrung out of an analysis are interpreted as some kind of stable entities, progress toward personality measurement would seem to be impeded. . . . It will doubtless be necessary to resort to cumulative developmental studies" (302). One psychologist fulminates: "From a certain point of view the history of mental testing is primarily a history of the idol worship of the parameters of the bilaterally symmetrical curve. . . . It is unfortunate that so many laymen have been so easily misguided into the faith that any wishful product of imagination converted into numbers by authoritative proclamation constitutes science and scientific method" (306). There are even measurement men who, on the basis of evidence *conclusive to them*, take the position that "no single test and no battery of tests of any type or description yields unambiguous information about the quantities educationalists wish to measure. . . . They (the present day tests) are not more adequate than were the measuring instruments of the alchemists and the astrologers" (304).

Certain persons appear to be much distressed by such criticisms; but some criticism is an aid to healthy growth. It appears that more criticism is directed against the theory than the practice and becomes largely an intellectual matter. By way of analogy, we may note that in Berne, Switzerland, and in many other cities of the Old World, fourteenth-century town clocks, whose machinery was designed on the basis of the now discredited Ptolemaic astronomy, still keep good time. So in education our tests and theories of measurement may be totally invalid, but it cannot be denied that many a teacher has been stimulated by their use to new effort, new enjoyment of his work, and new interests in his children. In spite of the opinions of the extremists who characterize the prevailing uncritical but practical use of measurement by schools as the grossest pseudo-science, such measurement may serve useful ends. To some extent we are all pragmatists; if we believe we can get benefit from an activity, we are likely to continue the activity.

The danger is that we shall be *too* pragmatic. While continuing to do things which are useful, we must keep alive those critical faculties by which the conventional and the plausible may be unmasked and errors of direction detected. For in the long run, it is truth alone that enables man to extend his conquest and control of nature.

C. Past and Present Trends in Educational Measurement

S. A. COURTIS

The determination of trends is a matter of judgment and interpretation. Even the tabulation of frequencies of articles rests upon judgment as to the type into which any given article falls. Any value in the discussion of trends below must therefore be sought more in the suggestiveness of its interpretations than in its factual basis.

The present major trends in educational measurement are judged to be five in number as follows:

1. A trend toward standardization
2. A movement away from the determination of laws
3. A growing dependence upon statistical analysis and deductive reasoning
4. An increase in observational personality and character rating
5. A greater emphasis on longitudinal studies of individuals.

Background

In discussing present trends, some reference should be made to the contributions of the past. From Rice (1894) to Thorndike (1910), educational measurement was little more than a novel and interesting variation of the conventional examination—the attempt to adapt to education some of the methods and procedures used by Cattell (1885) and other early psychologists in the study of individual differences. Thorndike's handwriting scale, the first calibrated educational ruler, supplied, not another novel examination, but something new—*units* of measurement based, supposedly, upon a universal law or principle (the Fullerton-Cattell Equal Difference Theorem). It was hailed with an enthusiasm which measurement men of this generation would have difficulty in appreciating. Finally, many believed, the day of exact science had dawned for education. At last precise knowledge, prediction, and control were to be had in return for scientific effort.

The period from 1910 to 1920 was one of rapid growth and creativity. Binet's concept of mental age was just beginning to influence psychological thinking, and education went "scientific" with a vengeance. Hillegas, Buckingham, Ayres, Trabue, Woody, Terman, and others discovered ways of extending basic concepts to other subjectmatter fields. Otis devised the group intelligence test that enormously extended the range of mental measurements. Tests and test-users multiplied at a rapid rate. The utilization of tests by the United States Army during the War served to bring measurement to popular notice and give it a prestige it might otherwise have taken many years to acquire.

The decade from 1920 to 1930 was the period of the great depression in measurement. The novelty and the glamor of a new fad was over. Funds were increasingly scarce. Creative attention shifted to other fields—curriculum revision, the activity movement, the development of better school-

community relationships. School measurement activities continued as routinized reminders of the obligation of education to be scientific and as a fruitful field of these subjects for candidates for academic degrees. Correlational studies multiplied; then a new type of creative activity came to the fore. Spearman's emphasis in England on general and specific factors stimulated an entirely new approach to the problem of test construction, ably propagated in this country by Holzinger, Thurstone, and others. And thus a new upward surge or cycle of development came into being. It is from the perspective of these three periods that the trends in 1936, 1937, and 1938 are viewed.

Standardization

Bureaus of educational research found it necessary to standardize tests and procedures within the school systems they served. The same need existed over larger areas, and a number of states developed statewide testing programs, some of which were remarkable for their consistent self-improvement through critical analysis. Nationally, the Cooperative Test Service of the American Council on Education and similar agencies (320, 324) are rapidly standardizing measurement instruments and procedures as much as it is possible to standardize them in a democratic country. The invention of mechanical aids to scoring is an aid in the same direction.

Fundamental Laws

Of the original impetus—the creation of a science of education in terms of law, prediction, and control—little remains. The language persists, but not the substance. From time to time new attempts are made to discover law or to establish units (329, 330, 332, 345), but such factors as the growing confusion of fact and theory in physics and astronomy, the increasing dependence on statistical procedures—justified in terms of logic not experimentation, including the complacent acceptance of correlation coefficients of 40-70 as indications of satisfactory prediction (327, 344)—the increasing separation between test-makers and test-users, are all developing a widespread conviction that extraneous units, laws, and control in human behavior are neither feasible nor desirable.

It is felt by some that measurement has failed of its early promise. In teaching and pupil administration, we are scarcely nearer a science of education today than when we started. The reason is that technics of measurement and statistical methods of analysis have had to be transferred from static fields to a dynamic one. In physics, the length of a bar of iron changes only as conditions change, and these can be largely controlled. Static measures and interpretations suffice. In education, however, the child, learning, and ability are living, growing entities. They are affected by subtle factors and change rapidly. They can be correctly measured and appraised only in terms of units and procedures adapted to living and

rapidly changing traits. It is significant that even the first attempts to move in this direction have been productive (321).

Dependence on Deductive Reasoning

The element which more than any other differentiates science from all other forms of human achievement is its acceptance of an authority outside itself as a court of last resort. The basis of the scientific method is the pragmatic empiricism of the cycle—experimentation, generalization, prediction, and verification.

Mathematics, on the other hand, is deductive. Statistical procedures start from assumptions and grow by logical deduction. It is interesting to follow the derivation of a theorem from an assumption, particularly in a field where much experimental evidence contrary to the theorem is available (340). Often it is not possible to check the end product of deductive reasoning experimentally, and when it is done the result is often surprising (317). Increasingly in measurement articles, justification is based upon logical, mathematical reasoning instead of upon concrete experimental evidence.

By the degree that such action is taken, the gap between the specialist in test and scale construction, and the user of tests in the classroom, is likely to become widened. Teachers cannot read and understand current discussions of item analysis, factor loadings, correlation pathways, and the host of statistical methods and proofs to be found in measurement articles (316, 331, 333, 334, 343), but they do sense the contrast between the promises of educational measurement and the actual inadequacies of tests in the classroom. Deductive reasoning has its place, but there is need to ask the question, Is the trend toward increasing statistical complexity, when unchecked by objective experimentation, a desirable advance or a menacing illusion?

Measurement by Observational Rating

Teacher antagonism toward measurement has frequently been based on the wide separation between the narrow products measured by the early tests and the objectives for which the teachers are working. Character, personality, and ideals are almost universally acknowledged to be higher, more important goals than elemental knowledges and skills. There has been an increasing trend toward some form of quantitative evaluation of the so-called "intangibles." In this direction may be noted the time-sampling technic, the behavior rating scales, and other observational ratings (335, 338, 342), either direct or aided by objective devices such as the tests developed by the Eight Year Study of the Progressive Education Association (336, 337, 341). The influence of this trend has extended far and wide, two of the most notable results being the revision, on all educational levels, of examinations (319) and of marking (318).

Longitudinal Studies

The event of the period covered by this review has been the flowering, so to speak, of the Harvard Growth Studies (323) and others, and the publication of the monographs of the Society for Research in Child Development (339). A new term has been coined, "longitudinal," in contrast with "cross sectional," measurement, and an idea long gestating has come to birth, namely, that interpretation of a child's measurements should be in terms of his own growth curve and not in terms of norms derived from mass measurements. Longitudinal studies demand new types of records, new controls, new statistical methods. Although Baldwin and his successors started collecting cumulative records on individual children many years ago, few persons even yet sense the implications and potentialities of this form of measurement.

Mention should be made of the publications by Dearborn (323) and by Davenport (322) of their full raw data which makes available, to all, the wealth of information painstakingly collected over many years.

CHAPTER VII

Recent Literature on Testing¹

DOUGLAS E. SCATES

THE PURPOSE OF THIS CHAPTER is to list the recent systematic literature dealing with testing and to report technical references on test construction. The entire bibliography of the present issue of the *Review of Educational Research* is of course a presentation of recent literature on testing, and this issue may be regarded as one item in the list of bibliographies presented below.

Bibliographies of Tests

The basic bibliography of commercially available tests at the present time is by Hildreth (352), and covers educational, intelligence, personality, and environment measures. Information on new tests has been kept up to date by Buros (346, 347, 348), both in a series of annual bulletins and in the monthly checklists appearing in the *Education Index* (350). This year Buros (348) inaugurated a test review service which is unique and should prove valuable. It is designed to render the same service with reference to tests as book reviews render for new books.

Odell (356, 357) revised and brought up to 1936 his earlier test bibliographies. Catalogs of test depositories also are serviceable for current information. Other lists of tests will be found in the discussions referred to in the sections which follow. For descriptions of some of the newer testing procedures designed to gather evidence on some of the less tangible aspects of growth, one should consult the references cited in Chapter IV in the section on "Examples of Newer Measuring Instruments."

Bibliographies and Digests of Achievement Test Literature

The bibliographies and discussions in the *Review of Educational Research* (358) on educational tests in the preceding cycle may serve as a starting point. South (360) prepared an extensive index of periodical literature on testing, which is arranged by author, with a subject index. Monroe and Shores (355) covered test bibliographies from 1910 to 1935, under such heads as "Test Construction," "Testing Programs," "Tests and Scales," and cross references were given. Jones and Brown (353) in 1935 summarized recent educational test literature in some detail.

Swineford and Holzinger (361) published annotated selected references each year since 1933, adding the topic "Factor Analysis" for references published in 1936 and later years. The United States Office of Education (351) publishes annually its lists of research studies, which are predominantly master's and doctor's theses. Testing is covered under a general head "Tests and Testing," with five subdivisions, in the table of contents,

¹ Bibliography for this chapter begins on page 568.

and mostly under "Tests and Scales" in the subject index at the back. Many of these references are annotated.

The *Education Index* (350) must be regarded as the most important source of information on current testing literature. The principal heads to consult are: "Achievement Tests," "Educational Measurements," "Tests and Scales," "Intelligence Tests," "Personality Tests," "Social Intelligence Tests and Scales," "Behavior Tests and Scales," and numerous cross references to other heads. Buros (347, 348) should be consulted for recent books on testing, including excerpts from reviews of books. The books and reviews on statistical and research methodology in the 1938 edition of his bibliography have also been printed separately (349).

In the bibliography of Canadian education compiled by Smith (359), references to testing will be found under the heads "Educational Measurements," "Tests," and "Factor Analysis."

Literature on Intelligence and Personality Measurement

Although theoretically this literature falls outside the scope of the present issue of the *Review of Educational Research*, a few summaries can be referred to briefly. The June 1938 issue of the *Review* (363) dealt with these areas, as did also issues in two earlier cycles. The works referred to above (347, 348, 350, 353, 355, 359, 360, 361) will yield references in these areas as well as in achievement if the proper sections or heads are consulted.

In the field of personality and environmental measurement Symonds' 1934 publication (362) may be considered a basic work still, giving half of its pages to a description of data-gathering instruments. Maller (354) revised his earlier list of tests bringing them down to 1937. Traxler (364) printed a brief list, with discussion, and Vernon (365) did somewhat the same thing in England.

Textbooks Dealing with Achievement Testing

Books, textbooks and others, which have appeared in the field of measurement—achievement, intelligence, personality, and environmental—beginning with 1933, are listed, with reviews, by Buros (347, 348). We present here a list limited to textbooks in the field of achievement tests published since the middle of 1935. Buros may be consulted for reviews of these books.

Greene and Jorgensen (367, 368) revised, expanded, and divided their earlier treatment so that separate books are now available for elementary- and high-school fields. The books contain a sufficient amount of material in common so that they can be used together in the same class, and can be divided according to student interest. Greene collaborated with Newkirk (371) in the preparation of a volume especially for industrial education. Lee (370) produced a textbook for high-school tests, and Orleans (372) and Rinsland (373) published general texts in 1937. Orleans em-

phasized use and Rinsland prepared the most complete assemblage of rules to date for making objective tests of various kinds. They are addressed primarily to the classroom teacher. The American Council on Education sponsored the production of a book on test construction (369) which represents a composite of points of view. It is the most thought-provoking book yet to appear, though pitched somewhat above the level and range of interests of typical graduate classes. Wright (375) prepared a "measurement-at-a-glance" type of outline. Smith (374) attempted to center attention on principles. In general, the textbooks of this period evidence a tendency away from the detailed description of commercially available tests.

Literature on Statistical Methods in Test Construction

Cureton and Dunlap summarized the literature on statistical contributions to test construction and analysis in the June 1933 *Review of Educational Research*. We present here a number of references which continue their bibliography (376-404). In view of the recency of their treatment, it does not seem appropriate to summarize the material at this time; it is therefore presented simply as a checklist. Present plans call for another summary of statistical material in the December 1939 issue of the *Review*. For a checklist of books, bulletins, and monographs dealing with statistics in general, Buros (347, 348, 349) may be consulted.

This bibliography emphasizes statistical technic. For references on test construction which place less emphasis upon statistics, consult numbers (369, 373), and references cited in the last three sections of Chapter IV.

Statistics in Test Development and Interpretation²

The rapid strides which have been made recently in the effective use of statistical methods in the development, critical refinement, and more meaningful interpretation of educational tests are very encouraging signs of progress in educational measurement. Many competent mathematicians have come to recognize the contributions which their scientific training may make to theory and practice in educational measurement. The result has been a marked improvement in the training of research students in education. Today a rather surprising number of educators are qualified by training and experience to make critical and legitimate use of refined statistical procedures in the field of measurements. Psychologists have met their problems in a similar way, with the result that many significant contributions to the literature of measurement dealing with critical refinements and meaningful interpretations of test results have been made by those interested mainly in the psychological aspects of the problem. Thus, educators and psychologists, both being concerned with problems of measurement, are both concerned with the contributions which statistical technics can make to the solution of their problems.

² Paragraph by Harry A. Greene.

BIBLIOGRAPHY ON EDUCATIONAL TESTS AND THEIR USES

Chapter I. Studies of Educational Achievement

1. ANDERSON, IRVING H., and FAIRBANKS, GRANT. "Common and Differential Factors in Reading Vocabulary and Hearing Vocabulary." *Journal of Educational Research* 30: 317-24; January 1937.
2. ANDERSON, V. L., and TINKER, M. A. "The Speed Factor in Reading Performance." *Journal of Educational Psychology* 27: 621-24; November 1936.
3. BETTS, EMMETT A. "A Preliminary Investigation of the Value of a Calculating Machine for Arithmetic Instruction." *Education* 58: 229-35; December 1937.
4. BOLTON, F. B. "The Predictive Value of Three Kinds of Tests for a Course in United States History." *Journal of Educational Research* 30: 445-47; February 1937.
5. BREED, FREDERICK S., and RALSTON, ALICE L. "The Direct and Indirect Methods of Teaching the Addition Combinations." *Elementary School Journal* 37: 283-94; December 1936.
6. BREIDENSTINE, A. G. "The Educational Achievement of Pupils in Differentiated and Undifferentiated Groups." *Journal of Experimental Education* 5: 91-135; September 1936.
7. BROWNELL, W. A., and WATSON, BRANTLEY. "The Comparative Worth of Two Diagnostic Techniques in Arithmetic." *Journal of Educational Research* 29: 664-76; May 1936.
8. BUCK, WALTER. "A Measurement of Changes in Attitudes and Interests of University Students over a Ten-Year Period." *Journal of Abnormal and Social Psychology* 31: 12-19; April 1936.
9. BUCKINGHAM, GUY E., and LEE, RICHARD E. "A Technique for Testing Unified Concepts in Science." *Journal of Educational Research* 30: 20-27; September 1936.
10. BURNETT, R. WILL. "An Experiment in the Problem Approach in the Teaching of Biology." *Science Education* 22: 115-20; March 1938.
11. CONARD, EDITH U. "A Study of the Influence of Manuscript Writing and of Typewriting on Children's Development." *Journal of Educational Research* 29: 254-65; December 1935.
12. CONGDON, NORA A. "Differences in the Achievement in Geography, Civics and History, and General Science of Teachers College Entrants from Different Sections of the Country and from Rural and Urban Populations." *Journal of Experimental Education* 5: 274-77; March 1937.
13. CRAMER, JOHN F. "Australian Tests and American Pupils." *Elementary School Journal* 37: 17-24; September 1936.
14. CRAWFORD, CLAUDE C., and CARMICHAEL, JACOB A. "The Value of Home Study." *Elementary School Journal* 38: 194-200; November 1937.
15. DE SAUZE, EMILE B. "An Oralists Looks at the Results." *Education* 57: 422-27; March 1937.
16. DEAN, CHARLES D. "Predicting Sight-Singing Ability in Teacher Education." *Journal of Educational Psychology* 28: 601-608; November 1937.
17. DICKTER, M. RICHARD. "The Relationship between Scores on the Scholastic Aptitude Test and College Marks in Chemistry." *Journal of Experimental Education* 6: 40-45; September 1937.
18. DOLCH, E. W., and BLOOMSTER, MAURINE. "Phonic Readiness." *Elementary School Journal* 38: 201-205; November 1937.
19. DOLL, EDGAR A., and MCKAY, B. ELIZABETH. "The Social Competence of Special Class Children." *Journal of Educational Research* 31: 90-106; October 1937.
20. DONNELLY, HELEN E. "The Growth of Word Recognition Skills in Grade One." *Education* 56: 40-43; September 1935.
21. DOUGLASS, HARL R., and FIELDS, GEORGE H. "An Experimental Comparison of the Daily Assignment-Daily Recitation and a Unit Assignment in High School Chemistry." *Science Education* 20: 141-45; October 1936.
22. DOUGLASS, HARL R., and PEDERSON, KENNETH L. "An Experimental Evaluation of a Unit Procedure in Teaching American History." *School Review* 44: 362-71; May 1936.

23. DOWNING, ELLIOT R. "Some Results of a Test on Scientific Thinking." *Science Education* 20: 121-28; October 1936.
24. DUNLAP, JACK W. "Preferences as Indicators of Specific Academic Achievement." *Journal of Educational Psychology* 26: 411-15; September 1935.
25. EASTBURN, L. A. "The Relative Efficiency of Instruction in Large and Small Classes on Three Ability Levels." *Journal of Experimental Education* 5: 17-22; September 1936.
26. EASTBURN, L. A. "Report of Class Size Investigations in the Phoenix Union High School, 1933-34 to 1935-36." *Journal of Educational Research* 31: 107-17; October 1937.
27. ECKERT, RUTH E., and MILLS, HENRY C. "Variations Among High School Seniors in Promise and Performance Measures." *School Review* 44: 274-82; April 1936.
28. FARNSWORTH, PAUL R. "Are 'Music Capacity' Tests More Important than 'Intelligence' Tests in the Prediction of the Several Types of Music Grades?" *Journal of Applied Psychology* 19: 347-50; June 1935.
29. FEDER, DANIEL D. "The Effect of Directions and Arrangement of Items on Student Performance in a Test." *Journal of Educational Research* 30: 28-35; September 1936.
30. FICKEN, C. E. "Predicting Achievement in the Liberal Arts College." *School and Society* 42: 518-20; October 12, 1935.
31. FINCK, EDGAR M. "Relation of Ability in Reading to Success in Other Subjects." *Elementary School Journal* 36: 260-67; December 1935.
32. GARNETT, W. L. "A Study of Status and Improvement of College Freshmen in Certain Skills of English Composition." *Journal of Experimental Education* 6: 29-34; September 1937.
33. GARRISON, BLANCHE L. "A Contribution of Measurement to Remedial Reading." *Education* 56: 144-48; November 1935.
34. GATES, ARTHUR I., and BOND, G. L. "Some Outcomes of Instruction in the Speyer Experimental School (P. S. 500)." *Teachers College Record* 38: 206-17; December 1936.
35. GOETSCH, WALTER R. "The Effect of Early Handwriting Instruction." *Elementary School Journal* 36: 290-98; December 1935.
36. GOFORTH, LILLIAN. "A Classroom Experiment in Teaching Reading and Arithmetic through Games." *Educational Method* 17: 231-35; February 1938.
37. GORMAN, FRANK. "The Arithmetic Vocabulary of the Elementary School Teacher." *Elementary School Journal* 38: 373-79; January 1938.
38. GRANT, ALBERT. "The Comparative Validity of the Metropolitan Readiness Tests and the Pintner-Cunningham Primary Mental Test." *Elementary School Journal* 38: 599-605; April 1938.
39. GRAY, HOWARD A. "Recorded Sound in the Field of Achievement Testing." *Journal of Educational Research* 31: 608-15; April 1938.
40. GRAY, J. STANLEY. "A Neglected Phase of Educational Research." *Journal of Educational Research* 29: 83-90; October 1935.
41. GROSSNICKLE, FOSTER E. "Concepts in Social Arithmetic for the Eighth Grade Level." *Journal of Educational Research* 30: 475-88; March 1937.
42. GUNDLACH, W. B. "Ability of High School Pupils in Common Fractions." *Journal of Educational Research* 29: 347-54; January 1936.
43. GUTZEIT, C. L. "Teaching an Abstract Concept in Science by Means of the Motion Picture." *Educational Screen* 16: 147-48, 150-51; May 1937.
44. HARAP, HENRY, and BARRETT, URSULA. "Experimenting with Real Situations in Third Grade Arithmetic." *Educational Method* 16: 188-92; January 1937.
45. HERR, WILLIAM A. "Junior High School Accelerants and Their Peers in Senior High School. I. Scholastic Achievement." *School Review* 45: 186-95; March 1937.
46. HERRICK, JOHN H. "The Evaluation of Certain Aspects of Thinking in the Social Studies." *Educational Method* 15: 422-26; May 1936.
47. HILL, MARY BUFFUM. "A Study of the Process of Word Discrimination in Individuals Beginning to Read." *Journal of Educational Research* 29: 487-500; March 1936.
48. HILLIARD, GEORGE H., and TROXELL, ELEANOR. "Informational Background As a Factor in Reading Readiness and Reading Progress." *Elementary School Journal* 38: 255-63; December 1937.

49. KELLEY, VICTOR H. "The Reading Abilities of Spanish and English Speaking Pupils." *Journal of Educational Research* 29: 209-11; November 1935.
50. LAMP, CHARLES J., and KEYS, NOEL. "Can Aptitude for Specific Musical Instruments be Predicted?" *Journal of Educational Psychology* 26: 587-96; November 1935.
51. LOWEN, MAUDE B. "The Effect of Environment on Creative Ability in Fourth Grade Children." *Elementary School Journal* 36: 120-26; October 1935.
52. MCCULLOUGH, CONSTANCE. "Improving Reading Comprehension in Grade IX." *School Review* 45: 266-73; April 1937.
53. MCDADE, JAMES E. "A Hypothesis for Non-Oral Reading: Argument, Experiment, and Results." *Journal of Educational Research* 30: 489-503; March 1937.
54. MANUEL, H. T. "A Comparison of Spanish-Speaking and English-Speaking Children in Reading and Arithmetic." *Journal of Applied Psychology* 19: 189-202; April 1935.
55. MILLER, W. A. "Reading With and Without Pictures." *Elementary School Journal* 38: 676-82; May 1938.
56. MOORE, FREDRIKA, and HAMBLIN, ANGELINE. "Sixth Grade Health Awareness in Massachusetts." *Journal of Educational Research* 30: 684-93; May 1937.
57. MOORE, J. E. "A Comparative Study of the Educational Achievement of Delinquent and Dependent Boys." *Peabody Journal of Education* 14: 1-6; July 1936.
58. MORGAN, CLELLEN L. "An Experiment with a Special Class of Superior Undergraduate Students." *Journal of Applied Psychology* 20: 146-53; February 1936.
59. MORRISON, MARIA PAUL. "Mass Method Versus Individual Method in Teaching Multiplication to Fourth Grade Pupils." *Education* 57: 345-47; February 1937.
60. NETZER, R. F. "Stimuli for Oral Language." *Elementary English Review* 15: 91-94; March 1938.
61. NEWLAND, T. ERNEST. "Needed Appraisal." *Journal of Higher Education* 7: 313-17; June 1936.
62. NORTHBY, A. S. "A Comparison of Five Types of Spelling Tests for Diagnostic Purposes." *Journal of Educational Research* 29: 339-46; January 1936.
63. ORATA, PEDRO T. "Measurement and Experimentation and Education for Independent Reconstruction." *Journal of Educational Research* 30: 1-13; September 1936.
64. OVERN, A. V., and STUBBINS, D. G. "Scholastic Difficulties of the Children of Immigrants." *Journal of Educational Research* 31: 278-80; December 1937.
65. PACE, C. ROBERT. "Handedness and Reading Ability in High School and College Students." *Journal of Educational Research* 31: 205-10; November 1937.
66. PARK, JOE, and STEPHENSON, RUTH. "A Teaching Experiment with Visual Aids." *Education* 58: 498-500; April 1938.
67. PAYNE, FERNANDUS. "Research in Higher Education." *Journal of Higher Education* 8: 59-63; February 1937.
68. PECK, LEIGH. "An Experiment with Drawing in Relation to the Prediction of School Success." *Journal of Applied Psychology* 20: 16-43; February 1936.
69. PEIK, W. E. "A Generation of Research on the Curriculum." *The Scientific Movement in Education*. Thirty-Seventh Yearbook, National Society for the Study of Education. Bloomington, Ill.: Public School Publishing Co., 1938. Chapter 4, p. 53-67.
70. PETERSON, G. W., and DOUGLASS, HARL R. "Published Workbooks versus Pupil Made Notebooks in Ninth-Grade General Science." *School Review* 43: 608-13; October 1935.
71. PORTER, R. B. "The Effect of Recreations in the Teaching of Mathematics." *School Review* 46: 423-27; June 1938.
72. PULIAS, EARL V. *Variability in Results from New-Type Achievement Tests*. Research Studies in Education, No. 2. Durham, N. C.: Duke University Press, 1937. 100 p.
73. REILLEY, A. G. "Let's Make Citizenship Training Practical." *Educational Method* 17: 99-106; December 1937.
74. RIGG, MELVIN. "The Relationship between Discrimination in Music and Discrimination in Poetry." *Journal of Educational Psychology* 28: 149-52; February 1937.

75. ROSENLOF, G. W., and WISE, H. E. "Experimenting with a Course in Combined Physical Science." *School Review* 46: 346-56; May 1938.
76. ROSS, V. R. "Musical Talents of Indian and Japanese Children." *Journal of Juvenile Research* 20: 95-113; July 1936.
77. ROSS, V. R. "Relationships between Intelligence, Scholastic Achievement, and Musical Talent." *Journal of Juvenile Research* 20: 47-64; April 1936.
78. SCHREPEL, M., and LASLETT, H. R. "On the Loss of Knowledge by Junior High School Pupils over the Summer Vacation." *Journal of Educational Psychology* 27: 299-303; April 1936.
79. SMELTZER, C. H., and ADAMS, C. R. "The Educability of Transients." *Journal of Educational Psychology* 28: 382-86; May 1937.
80. STALNAKER, JOHN M., and KURATH, WILLIAM. "A Comparison of Two Types of Foreign Language Vocabulary Test." *Journal of Educational Psychology* 26: 435-42; September 1935.
81. STOUT, H. G. "Variations of Normal Children." *Journal of Experimental Education* 6: 84-100; September 1937.
82. STUIT, D. B., and JURGENSEN, C. E. "The Effect of Method of Presentation on Spelling Scores." *Journal of Experimental Education* 5: 271-73; March 1937.
83. SWANSON, D. E., and TIFFIN, JOSEPH. "Betts Physiological Approach to the Analysis of Reading Disabilities as Applied to the College Level." *Journal of Educational Research* 29: 433-48; February 1936.
84. TILLEY, H. C. "A Technique for Determining the Relative Difficulty of Word Meanings among Elementary School Children." *Journal of Experimental Education* 5: 61-64; September 1936.
85. TINKER, MILES A. "Reliability and Validity of Eye-Movement Measures of Reading." *Journal of Experimental Psychology* 19: 732-46; December 1936.
86. TINKER, MILES A., and PATERSON, DONALD G. "Studies of Typographical Factors Influencing Speed of Reading. Role of Set in Typographical Studies." *Journal of Applied Psychology* 19: 647-51; December 1935.
87. TRAXLER, ARTHUR E. "Correlation of Achievement Scores and School Marks." *School Review* 45: 776-80; December 1937.
88. TRAXLER, ARTHUR E. "An Experiment in Teaching Corrective Reading to Eight Seventh-Grade Pupils." *Journal of Educational Research* 29: 247-53; December 1935.
89. TRAXLER, ARTHUR E., and ANDERSON, H. A. "The Reliability of an Essay Test in English." *School Review* 43: 534-39; September 1935.
90. TRAXLER, ARTHUR E. "Sex Differences in Rate of Reading in the High School." *Journal of Applied Psychology* 19: 351-52; June 1935.
91. WAGNER, MAZIE E., and STRABEL, EUNICE. "Predicting Performance in College English." *Journal of Educational Research* 30: 694-99; May 1937.
92. WALCOTT, FRED G. "New Methods and Objectives in Teaching Dull-Normal Pupils to Read." *School Review* 44: 348-61; May 1936.
93. WHEELER, LESTER R. "An Experimental Study of the Value of Informal Methods in Teaching Primary Reading." *Journal of Educational Research* 31: 335-47; January 1938.
94. WILSON, FRANK T., and OTHERS. "Reading Progress in Kindergarten and Primary Grades." *Elementary School Journal* 38: 442-49; February 1938.
95. WILSON, FRANK T., and BURKE, AGNES. "Reading Readiness in a Progressive School." *Teachers College Record* 38: 565-80; April 1937.
96. WITTY, PAUL A., and KOPEL, DAVID. "Factors Associated with the Etiology of Reading Disability." *Journal of Educational Research* 29: 449-59; February 1936.
97. WOOLF, HENRIETTE, and LIND, CHRISTINE. "A Study of Some Practical Considerations Involved in the Use of Two Educational Test Batteries." *Journal of Educational Psychology* 26: 629-34; November 1935.
98. WORLTON, J. T. "Individualizing Instruction in Reading." *Elementary School Journal* 36: 735-47; June 1936.
99. WRIGHTSTONE, J. WAYNE. "Appraisal of Newer Practices in Latin Teaching." *School and Society* 42: 302-304; August 31, 1935.
100. WRIGHTSTONE, J. WAYNE. *Appraisal of Newer Practices in Selected Public Schools*. New York: Teachers College, Columbia University, 1935. 117 p.

Chapter II. Educational Prevention, Diagnosis, and Remediation

101. ANSLEY, MABEL L. "Extensive Remedial Reading." *English Journal* (H. S. Ed.) 25: 121-23; February 1936.
102. BARRY, LINDA, and PRATT, MARJORIE. "A Remedial-Reading Program in a Public High School." *School Review* 45: 17-27; January 1937.
103. BERMAN, SAMUEL. "Diagnosis of Pupil Differences." *Educational Programs for Today and Tomorrow*. Twenty-Third Annual Schoolmen's Week Proceedings. Philadelphia: School of Education, University of Pennsylvania, 1936. p. 338-44.
104. BRILL, MOSHE. "Performance Tests as Aids in the Diagnosis of Maladjustment." *Pedagogical Seminary and Journal of Genetic Psychology* 49: 199-214; September 1936.
105. BROOKS, J. J. "Helping the Slow Reader." *English Journal* (H. S. Ed.) 24: 669-71; October 1935.
106. BURK, C. M. "Study of the Influence of Some Factors in Style of Composition on the Interest, Comprehension and Rate of Reading of Fourth-Grade Pupils." *Journal of Experimental Education* 4: 303-52; June 1936.
107. CHASE, C. THURSTONE, JR. "Studying Individual Boys with the Help of the New Tests." *Educational Record* 17: 140-43; Supplement No. 9, January 1936.
108. DALE, EDGAR. "Diagnosis in Leisure-Time Activities." *Educational Diagnosis*. Thirty-Fourth Yearbook, National Society for the Study of Education. Bloomington, Ill.: Public School Publishing Co., 1935. Chapter 23, p. 477-86.
109. DAVIS, M. L. "Diagnostic Cards for Kindergarten and First Grade." *Childhood Education* 13: 32-35; September 1936.
110. DEADY, C. F. "Program of Diagnostic and Remedial Teaching." *Proceedings, 1935*. Washington, D. C.: National Catholic Educational Association, 1935. p. 217-19.
111. EURICH, A. C. "Research that Improves Instruction." *Harvard Educational Review* 7: 176-83; March 1937.
112. FAWCETT, H. P. *The Nature of Proof*. Columbus, Ohio: Evaluation Staff of the Progressive Education Association (Ohio State University), 1936. p. 15-17.
113. GARRISON, BLANCHE L. "A Contribution of Measurement to Remedial Reading." *Education* 56: 144-48; November 1935.
114. GATES, ARTHUR I. "Diagnosis and Treatment of Extreme Cases of Reading Disability." *The Teaching of Reading: A Second Report*. Thirty-Sixth Yearbook, National Society for the Study of Education. Bloomington, Ill.: Public School Publishing Co., 1937. Chapter 13, p. 391-416.
115. GATES, ARTHUR I. "Necessary Mental Age for Beginning Reading." *Elementary School Journal* 37: 497-508; March 1937.
116. GATES, ARTHUR I. "Needed Research in Elementary School Reading." *Elementary English Review* 13: 306-10, 318; December 1936.
117. GATES, ARTHUR I., and BOND, GUY L. "Reading Readiness." *Teachers College Record* 37: 679-85; May 1936.
118. GERSON, A. J. "Classroom Procedure Based on Pupil Diagnosis." *Educational Programs for Today and Tomorrow*. Twenty-Third Annual Schoolmen's Week Proceedings. Philadelphia: School of Education, University of Pennsylvania, 1936. p. 386-91.
119. HARTUNG, MAURICE L. "Evaluating Appreciation of the Culture Values of Mathematics." *School Science and Mathematics* 37: 168-81; February 1937.
120. HARTUNG, MAURICE L. *Interpretation of Data*. Bulletin No. 3. Columbus, Ohio: Evaluation Staff of the Progressive Education Association (Ohio State University), 1935.
121. HENDRICKS, B. CLIFFORD, and SMITH, O. M. "Measurable Objectives for General College Chemistry." *School Science and Mathematics* 36: 747-52; October 1936.
122. LEE, J. MURRAY. "Evaluation in the Modern Secondary School Classroom." *Education* 56: 148-53; November 1935.
123. LEFEVER, D. W. "Place of Measurement in the Construction of Units of Work." *Education* 56: 132-37; November 1935.
124. NATIONAL SOCIETY FOR THE STUDY OF EDUCATION. *Educational Diagnosis*. Thirty-Fourth Yearbook. Bloomington, Ill.: Public School Publishing Co., 1935. 563 p.

125. NEWLAND, T. ERNEST, and ACKLEY, W. E. "An Experimental Study of the Effect of Educational Guidance on a Selected Group of High School Sophomores." *Journal of Experimental Education* 5: 23-25; September 1936.
126. RANKIN, PAUL T. "Diagnosis and Remedial Instruction in Creativeness." *Educational Diagnosis*. Thirty-Fourth Yearbook, National Society for the Study of Education. Bloomington, Ill.: Public School Publishing Co., 1935. Chapter 24, p. 487-98.
127. SMITH, A. W., and TYLER, RALPH W.; and HEIL, L. M. "Evaluation of Student Achievement in the Physical Sciences." *American Physics Teacher* 5: 102-107; June 1937.
128. STENQUIST, JOHN L. "The Administration of a Program of Diagnosis and Remedial Instruction." *Educational Diagnosis*. Thirty-Fourth Yearbook, National Society for the Study of Education. Bloomington, Ill.: Public School Publishing Co., 1935. Chapter 25, p. 501-23.
129. STRANG, RUTH. "Improvement of Reading in High Schools." *Teachers College Record* 39: 197-206; December 1937.
130. TABA, HILDA. *Social Sensitivity*. Bulletin No. 6. Columbus, Ohio: Evaluation Staff of the Progressive Education Association (Ohio State University), 1936.
131. THOMPSON, J. M. "Use of the Item-Count Plan by Areas of Information as a Teaching Aid." *Business Education World* 17: 788-90; June 1937.
132. TYLER, RALPH W. "Characteristics of a Satisfactory Diagnosis." *Educational Diagnosis*. Thirty-Fourth Yearbook, National Society for the Study of Education. Bloomington, Ill.: Public School Publishing Co., 1935. Chapter 6, p. 95-111.
133. TYLER, RALPH W. "Defining and Measuring Objectives of Progressive Education." *Educational Research Bulletin (Ohio State University)* 15: 67-72; March 18, 1936.
134. TYLER, RALPH W. "Elements of Diagnosis." *Educational Diagnosis*. Thirty-Fourth Yearbook, National Society for the Study of Education. Bloomington, Ill.: Public School Publishing Co., 1935. Chapter 7, p. 113-29.
135. WAPLES, DOUGLAS. *Evaluation of Reading*. Bulletin No. 4. Columbus, Ohio: Evaluation Staff of the Progressive Education Association (Ohio State University), 1936.
136. WARBURTON, T. STANLEY. "Junior College Comprehensive Reading." *Junior College Journal* 6: 297-98; March 1936.
137. WITTY, PAUL A., and KOPEL, DAVID. "Causes of Poor Reading and Remedial Technique." *Illinois Teacher* 24: 21-22, 28; September 1935.
138. WITTY, PAUL A., and KOPEL, DAVID. "Evaluating Reading and Remedial Reading." *English Journal (H. S. and Coll. Ed.)* 26: 449-58; June 1937.
139. WITTY, PAUL A. "Heterophobia and Reading Disability." *Journal of Educational Psychology* 27: 222-30; March 1936.
140. WITTY, PAUL A., and KOPEL, DAVID. "Motivating Remedial Reading: the Interest Factor." *Educational Administration and Supervision* 22: 1-19; January 1936.
141. WITTY, PAUL A., and KOPEL, DAVID. "Motivated Remedial Reading in the High School: a Preliminary Report." *English Journal (H. S. and Coll. Ed.)* 25: 533-42; September 1936.
142. WITTY, PAUL A., and KOPEL, DAVID. "Preventing Reading Disability: the Reading Readiness Factor." *Educational Administration and Supervision* 22: 401-18; September 1936.
143. WRIGHTSTONE, J. WAYNE. "Diagnosing Reading Skills and Abilities in the Elementary Schools." *Educational Method* 16: 248-54; February 1937.
144. WRIGHTSTONE, J. WAYNE. "New Tests for New Needs." *Educational Method* 15: 407-11; May 1936.
145. ZEHRER, FREDERICK A. "Methods of Remedial Reading Instruction at the High School Level." *Harvard Teachers Record* 6: 154-62; June 1936.

Chapter III. The Essay-Type Test

146. DOTY, ROY A. *An Analysis of Teacher-Made Tests*. Master's thesis. Durham, N. C.: Duke University, 1938. 38 p.
147. HANFORD, A. CHESTER. "Tests and Examinations at Harvard College." *Proceedings*, 1936. Institute for Administrative Officers of Higher Institutions. Chicago: University of Chicago Press, 1936. p. 5-26.

148. HOLROYD, FLORA E. "The Values and Defects of Traditional Examination." *Techné* 20: 21-22; September-October 1936.
149. JONES, EDWARD S. "The Relationship of Examinations and Instruction." *Proceedings, 1936. Institute for Administrative Officers of Higher Institutions.* Chicago: University of Chicago Press, 1936. p. 190-202.
150. KANDEL, I. L. *Examinations and Their Substitutes in the United States.* Bulletin No. 28. New York: Carnegie Foundation for the Advancement of Teaching, 1936. 183 p.
151. MEYER, GEORGE. "The Effect on Recall and Recognition of the Examination Set in Classroom Situations." *Journal of Educational Psychology* 27: 81-99; February 1936.
152. MEYER, GEORGE. "An Experimental Study of the Old and New Types of Examinations; II. Methods of Study." *Journal of Educational Psychology* 26: 30-40; January 1935.
153. PULLIAS, EARL V. *Variability in Results from New-Type Achievement Tests.* Research Studies in Education, No. 2. Durham, N. C.: Duke University Press, 1937. 100 p.
154. RATHS, LOUIS. "Basis for Comprehensive Evaluation." *Educational Research Bulletin (Ohio State University)* 15: 220-24; November 11, 1936.
155. STALNAKER, JOHN M. "Essay Examinations Reliably Read." *School and Society* 46: 671-72; November 20, 1937.
156. STALNAKER, JOHN M. "A Study of Optional Questions on Examinations." *School and Society* 44: 829-32; December 19, 1936.
157. STALNAKER, JOHN M. "Problem of the English Examination." *Educational Record* 17: 35-48; Supplement No. 10, October 1936.
158. STEWART, A. W. "Objectivity in Tests Old and New." *Ohio Schools* 16: 12-13; January 1938.
159. THURSTONE, L. L. "An Appraisal of the Test Movement." *Proceedings, 1936. Institute for Administrative Officers of Higher Institutions.* Chicago: University of Chicago Press, 1936. p. 128-37.
160. WRIGHTSTONE, J. WAYNE. "Are Essay Examinations Obsolete?" *Social Education* 1: 401-405; September 1937.

Chapter IV. The Improvement of Classroom Testing

161. AIKIN, WILFORD M. "The Purposes of the Eight Year Experimental Study." *Educational Record* 16: 107-20; January 1935.
162. ALSCHULER, ROSE H., and HATTWICK, LABERTA WEISS. "Measuring Social and Emotional Development." *Appraising the Elementary-School Program.* Sixteenth Yearbook. Washington, D. C.: Department of Elementary School Principals, National Education Association, 1937. p. 502-507.
163. American Council on Education, Committee on Educational Testing. *Digest of Test Uses.* New York: Cooperative Test Service, 1936. 21 p.
164. BARTHELMESS, HARRIET M. "The Measurement of Outlining Skills." *Reconstructing Education Thru Research.* Official Report of 1936 Meeting. Washington, D. C.: American Educational Research Association, a department of the National Education Association, 1936. p. 260-63.
165. BEERS, FRED S. "The Human Side of This Testing Business." *Educational Record* 17: 577-608; October 1936.
166. BEERS, FRED S. "What Tests Shall We Use?" *Occupations* 14: 528-30; March 1936.
167. BERGSTRESSER, J. L. "Evaluation at the College Level in the Eight-Year Study of the Progressive Education Association." *American Association of Collegiate Registrars Bulletin* 12: 235-42; July 1937.
168. BROWNELL, WILLIAM A. "Some Neglected Criteria for Evaluating Classroom Tests." *Appraising the Elementary-School Program.* Sixteenth Yearbook. Washington, D. C.: Department of Elementary School Principals, National Education Association, 1937. p. 485-92.
169. BUCKINGHAM, GUY E., and LEE, R. E. "A Technique for Testing Unified Concepts in Science." *Journal of Educational Research* 30: 20-27; September 1936.

170. BUTLER, FRANK A. "Test for What You Have Taught." *Clearing House* 11: 425-28; March 1937.
171. CAIN, MAUD. "A Study of Thirteen Standard Geography Tests." *Journal of Geography* 34: 252-56; September 1935.
172. CHEYDLEUR, FREDERIC DANIEL. "The Case for More Objective Tests in Higher Education." *Education* 57: 408-16; March 1937.
173. CHICAGO. UNIVERSITY. BOARD OF EXAMINATIONS, THE TECHNICAL STAFF. *Manual of Examination Methods*. Second edition. Chicago: University of Chicago Bookstore, 1937. 177 p.
174. CONNOR, WILLIAM L. "Testing Techniques Adjusted to the Aims of Education for Character and Personality." *Education for Dynamic Citizenship*. Twenty-Fourth Annual Schoolmen's Week Proceedings. Philadelphia: School of Education, University of Pennsylvania, 1937. p. 290-94.
175. COOK, WALTER W. "The Use of Tests in a Supervisory Program." *Appraising the Elementary-School Program*. Sixteenth Yearbook. Washington, D. C.: Department of Elementary School Principals, National Education Association, 1937. p. 470-78.
176. CULLEY, BENJAMIN H. "Measuring the Ability to Interpret Data." *California Journal of Secondary Education* 13: 152-54; March 1938.
177. DIEDERICH, PAUL B. "Evaluation Records." *Educational Method* 15: 432-40; May 1936.
178. EBERHART, WILFRED. "The Teaching of Literature: An Approach to Evaluation." *Educational Research Bulletin (Ohio State University)* 17: 1-6, 27-28; January 19, 1938.
179. EGINTON, DANIEL P. "Tests and Measures of Satisfactory Growth." *Educational Method* 15: 145-49; December 1935.
180. ELLINGSON, MARK. "Evaluation of Art Accomplishment." *Role of Research in Educational Progress*. Official Report of 1937 Meeting. Washington, D. C.: American Educational Research Association, a department of the National Education Association, 1937. p. 170-75.
181. EURICH, ALVIN C. "Research that Improves Instruction." *Harvard Educational Review* 7: 176-83; March 1937.
182. FOWLER, BURTON P. "Some Fundamentals in Evaluating Educational Programs." *Educational Record* 17: 23-34; Supplement No. 10, October 1936.
183. GERBERICH, JOSEPH R. "Attitudes of College Students Toward the Use of Examinations for Determining Course Marks." *School and Society* 44: 284-88; August 29, 1936.
184. GINSBURG, MORRIS B. "Constructing and Using a Measure of Good Manners." *Appraising the Elementary-School Program*. Sixteenth Yearbook. Washington, D. C.: Department of Elementary School Principals, National Education Association, 1937. p. 514-21.
185. GORE, G. W., JR. "The Basis of Measurement in the Progressive College." *Quarterly Review of Higher Education Among Negroes* 4: 181-85; October 1936.
186. GRAY, WILLIAM S., editor. *Tests and Measurements in Higher Education*. Proceedings, 1936. Institute for Administrative Officers of Higher Institutions. Chicago: University of Chicago Press, 1936. 237 p.
187. HAWKES, HERBERT E.; LINDQUIST, E. F.; and MANN, C. R., editors. *The Construction and Use of Achievement Examinations*. Boston: Houghton Mifflin Co., 1936. 497 p.
188. HOPKINS, THOMAS. "The Problem of Measurement Involved in Integration." *Reconstructing Education Thru Research*. Official Report of 1936 Meeting. Washington, D. C.: American Educational Research Association, a department of the National Education Association, 1936. p. 201-205.
189. HUNTER, WILLIAM L. "Socializing Tests and Measurements." *Industrial Arts and Vocational Education* 26: 405-407; December 1937. 27: 5-7; January 1938.
190. JONES, CARLETON C. "Evaluating Achievement in Literature." *Educational Method* 15: 416-21; May 1936.
191. KENT, RAYMOND A., chairman. *The Testing Movement*. American Council on Education Studies, Series I, Vol. I, No. 1. Washington, D. C.: the Council, 1937. 39 p.

192. LEARY, BERNICE E. *A Survey of Courses of Study and Other Curriculum Materials Published Since 1934*. U. S. Dept. of the Interior, Office of Education, Bulletin, 1937, No. 31. Washington, D. C.: Government Printing Office, 1938. 185 p.
193. LEE, J. MURRAY. "Essential Elements of an Adequate Testing Program." *Appraising the Elementary-School Program*. Sixteenth Yearbook. Washington, D. C.: Department of Elementary School Principals, National Education Association, 1937. p. 465-69.
194. LEE, J. MURRAY. "Evaluation in the Modern Secondary School Classroom." *Education* 56: 148-53; November 1935.
195. LEE, J. MURRAY, and SEGEL, DAVID. *Testing Practices of High School Teachers*. U. S. Dept. of the Interior, Office of Education, Bulletin, 1936, No. 9. Washington, D. C.: Government Printing Office, 1936. 42 p.
196. LINDQUIST, E. F. "Changing Values in Educational Measurement." *Educational Record* 17: 64-81; Supplement No. 10, October 1936.
197. LINDQUIST, E. F. "Standardized Achievement Tests and Their Relation to Curriculum Content." *Appraising the Elementary-School Program*. Sixteenth Yearbook. Washington, D. C.: Department of Elementary School Principals, National Education Association, 1937. p. 479-84.
198. MCCALL, WILLIAM A.; HERRING, JOHN P.; and LOFTUS, JOHN J. "Measuring Achievement in Activity and Control Schools in New York City." *Teachers College Record* 39: 423-31; February 1938.
199. MCCLOY, C. H. "Intelligent Use of Tests." *Journal of Health and Physical Education* 8: 297; May 1937.
200. MCCONN, MAX. "Examinations Old and New: Their Uses and Abuses." *Educational Record* 16: 375-411; October 1935.
201. MCGAUCHY, JAMES R. *An Evaluation of the Elementary School*. Indianapolis: Bobbs-Merrill Co., 1937. 421 p.
202. MINNESOTA. UNIVERSITY. COMMITTEE ON EDUCATIONAL RESEARCH. *The Effective General College Curriculum as Revealed by Examinations*. College Problem Series. Minneapolis: University of Minnesota Press, 1937. 427 p.
203. NEW YORK COUNCIL OF SUPERINTENDENTS, COMMITTEE ON ELEMENTARY EDUCATION. *Cardinal Objectives in Elementary Education*. Second Report. Albany: New York State Education Department, 1929. p. 13-18.
204. OPPENHEIMER, JULIUS J. "Evaluation of Curriculum Reorganization in the College Thru the Use of Objective Tests." *The Role of Research in Educational Progress*. Official Report of 1937 Meeting. Washington, D. C.: American Educational Research Association, a department of the National Education Association, 1937. p. 120-25.
205. ORATA, PEDRO T. "Evaluation in the Field of Social Science." *Educational Method* 16: 121-37; December 1936.
206. PITTS, CLARA L. "Values of Standard Achievement Tests." *Educational Method* 17: 128-34; December 1937.
207. PROGRESSIVE EDUCATION ASSOCIATION, EVALUATION IN THE EIGHT YEAR STUDY. Materials prepared by participants in the . . . Group of the Progressive Education Association Summer Workshop, Sarah Lawrence College, Bronxville, N. Y., July 2-Aug. 13, 1937. Columbus, Ohio: Ohio State University, 1937. (Six mimeographed reports, in the fields of English, home economics, mathematics, science, social studies, and special groups.)
208. PULLIAS, EARL V. *Variability in Results from New-Type Achievement Tests*. Research Studies in Education No. 2. Durham, N. C.: Duke University, 1937. 100 p.
209. RALPH, H. THOBURN. "The Measurement and Improvement of Pupil Adjustment." *Appraising the Elementary-School Program*. Sixteenth Yearbook. Washington, D. C.: Department of Elementary School Principals, National Education Association, 1937. p. 508-13.
210. RANKIN, PAUL T. "Measuring Attainment of the So-Called General Objectives." *Twenty-Third Annual Conference on Educational Measurements*. Bulletin of the School of Education, Vol. 12, No. 4. Bloomington, Ind.: Indiana University, September 1936. p. 17-29.
211. RATHS, LOUIS E. "Appraising Certain Aspects of Student Achievement." *Guidance in Educational Institutions*. Thirty-Seventh Yearbook, Part I, National Society for the Study of Education. Bloomington, Ill.: Public School Publishing Co., 1938. Chapter 3, p. 89-117.

212. RATHS, LOUIS E. "Basis for Comprehensive Evaluation." *Educational Research Bulletin (Ohio State University)* 15: 220-24; November 11, 1936.
213. RATHS, LOUIS E. "Evaluating the Program of a School." *Educational Research Bulletin (Ohio State University)* 17: 57-84; March 16, 1938.
214. RATHS, LOUIS E. "Techniques for Test Construction." *Educational Research Bulletin (Ohio State University)* 17: 85-114; April 13, 1938.
215. REENE, MARY E. "If Not Testing—What?" *Educational Method* 15: 403-406; May 1936.
216. SANGREN, PAUL V. "Present Tendencies in the Uses of Educational Measurement." *Review of Educational Research* 5: 455-68, 510-12; December 1935.
217. SCATES, DOUGLAS E. "Complexity of Test Items as a Factor in the Validity of Measurement." *Journal of Educational Research* 30: 77-92; October 1936.
218. SMITH, HARRY P. "Use of Standardized Tests." *Journal of Geography* 36: 93-98; March 1937.
219. STALNAKER, JOHN M. "The Problem of the English Examination." *Educational Method* 17: 35-48; Supplement No. 10, October 1936.
220. STENQUIST, JOHN L. "Making Tests Effective." *Nation's Schools* 20: 18-21; September 1937.
221. "Summer Workshop in Secondary Education at Sarah Lawrence College, Bronxville, N. Y." *Progressive Education* 14: 287-88; April 1937.
222. TYLER, RALPH W. "Appraising Progressive Schools." *Educational Method* 15: 412-15; May 1936.
223. TYLER, RALPH W. "Defining and Measuring Objectives of Progressive Education." *Educational Record* 17: 78-85; Supplement No. 9, January 1936. Same, condensed in *Educational Research Bulletin (Ohio State University)* 15: 67-72; March 1936.
224. VALENTINE, W. L., and WENRICK, J. E. "The Validity of Examinations." *Journal of Applied Psychology* 19: 583-95; October 1935.
225. VOELKER, PAUL F., and OTHERS. "A Program of Demonstration and Research." *Educational Record* 16: 207-16; April 1935.
226. WALKER, HELEN M., editor. *Measurement of Teaching Efficiency*. Kappa Delta Pi Research Publications. New York: Macmillan Co., 1935. 237 p.
227. WERT, JAMES E. "Twin Examination Assumptions." *Journal of Higher Education* 8: 136-40; March 1937.
228. WOOD, BEN D. "Basic Considerations." *Review of Educational Research* 3: 5-20, 62; February 1933.
229. WOOD, BEN D. "Criteria of Individualized Education." *Teachers College Record* 38: 227-35; December 1936. Same, published in *Occupations* 14: 781-86; May 1936.
230. WRIGHT, WENDELL WILLIAM. *Reading Readiness—A Prognostic Study*. Bulletin of the School of Education, Vol. 12, No. 3. Bloomington, Ind.: Indiana University, 1936. 43 p.
231. WRIGHTSTONE, J. WAYNE. *Appraisal of Newer Elementary School Practices*. New York: Teachers College, Columbia University, 1938. 221 p.
232. WRIGHTSTONE, J. WAYNE. "Construction and Application of New Measures for the Social Studies." *Reconstructing Education Thru Research*. Official Report of 1936 Meeting. Washington, D. C.: American Educational Research Association, a department of the National Education Association, 1936. p. 164-69.
233. WRIGHTSTONE, J. WAYNE. "Measuring Some Major Objectives of the Social Studies." *School Review* 43: 771-79; December 1935.
234. WRIGHTSTONE, J. WAYNE. "Measuring the Attainment of Newer Educational Objectives." *Appraising the Elementary-School Program*. Sixteenth Yearbook. Washington, D. C.: Department of Elementary School Principals, National Education Association, 1937. p. 493-501.
235. WRIGHTSTONE, J. WAYNE. "New Tests for New Needs." *Educational Method* 15: 407-11; May 1936.
236. WRIGHTSTONE, J. WAYNE. "Recent Trends in Social-Studies Tests." *Social Education* 1: 246-50; April 1937.
237. ZAHN, D. WILLARD. "The Anecdotal Record in Relation to Character Development." *Education for Dynamic Citizenship*. Twenty-Fourth Annual Schoolmen's Week Proceedings. Philadelphia: School of Education, University of Pennsylvania, 1937. p. 294-300.

Chapter V. Developments in Test Scoring and Analysis

238. ALLEN, RICHARD D. *A Manual for the Use of the Providence Class Personnel Charts*. New York: Inor Publishing Co., 1935. 40 p.
239. BAEHNE, G. W., editor. *Practical Applications of the Punched Card Method in Colleges and Universities*. New York: Columbia University Press, 1935. 442 p.
240. BUSH, SISTER M. JEROME. *An Empirical Investigation to Assign Weights to the Possible Responses in a True-False Examination when "Guess" or "Do not Guess" Directions are Given*. Master's thesis. New York: Fordham University, 1935.
241. BRITTON, R. D. "Increasing Comparability of School Marks through Test Scores." *Educational Record* 17: 194-97; Supplement No. 10, October 1936.
242. CONRAD, HERBERT S. "The Scoring of the Rearrangement Test." *Journal of Educational Psychology* 27: 241-52; April 1936.
243. CONWAY, C. B. "New Scoring Apparatus for the Bernreuter Personality Inventory." *Journal of Applied Psychology* 20: 264-65; April 1936.
244. COOPERATIVE TEST SERVICE OF THE AMERICAN COUNCIL ON EDUCATION. *Bulletin of Information on the International Test Scoring Machine*. New York: the Service, 1936. 12 p.
245. DUNLAP, JACK W. "Relationship between the Type of Question and Scoring Errors." *Journal of Experimental Education* 6: 376-79; March 1938.
246. HERTZ, MARGUERITE R. "Scoring the Rorschach Ink-Blot Test." *Pedagogical Seminary and Journal of Genetic Psychology* 52: 15-64; March 1938.
247. INTERNATIONAL BUSINESS MACHINES CORPORATION. *The Machine Method of Scoring Objective Tests*. New York: the Corporation (590 Madison Avenue), 1938. 14 p.
248. INTERNATIONAL BUSINESS MACHINES CORPORATION, TEST SCORING MACHINE DEPARTMENT. *Methods of Adapting Tests for Machine Scoring*. New York: the Corporation (590 Madison Avenue), 1938. 24 p.
249. KELLEY, TRUMAN L. "The Scoring and Analysis of Free Association Tests." *Practical Applications of the Punched Card Method in Colleges and Universities*. (Edited by G. W. Baehne.) New York: Columbia University Press, 1935. p. 235-37.
250. KIAR, W. H. "Developing a Scoring Device for Rating Pupils' Pictorial Compositions." *Baltimore Bulletin of Education* 14: 42-46; March 1936.
251. LAWSON, DOUGLAS E. "Scoring of Subjective Tests with Several Variables Controlled." *Elementary School Journal* 38: 450-57; February 1938.
252. LINDQUIST, E. F. "Analysis of High School Test Results." *Practical Applications of the Punched Card Method in Colleges and Universities*. (Edited by G. W. Baehne.) New York: Columbia University Press, 1935. p. 217-24.
253. LINDQUIST, E. F., and MAUCKER, WILLIAM. "Objective Achievement Test Construction." *Review of Educational Research* 5: 469-83, 513-16; December 1935.
254. "Machines for Men." *Journal of Higher Education* 8: 215-16; April 1937.
255. MANUEL, H. T., and KNIGHT, JAMES. "A Device to Facilitate the Scoring of Tests." *Journal of Educational Research* 29: 219-20; November 1935.
256. REILY, H. M. "Basis for Grading in Physical Education." *Journal of Health and Physical Education* 6: 40-41, 58; October 1935.
257. ROSLOW, SYDNEY. "Apparatus to Facilitate the Scoring of the Thurstone Attitude Scales." *Journal of Social Psychology* 9: 103-105; February 1938.
258. SANDON, FRANK. "Correct Order Test." *Journal of Education (London)* 68: 704-706; November 1936.
259. SCATES, DOUGLAS E. "Costs of Standardized Testing." *American School Board Journal* 94: 56; April 1937.
260. SCATES, DOUGLAS E. "Unit Costs in the Administration of a Standardized Test." *Educational Research Bulletin (Ohio University)* 16: 38-45; February 1937.
261. SCHLAUDEMAN, KARL W. "New Scale for Scoring the Bernreuter Personality Inventory." *Journal of Social Psychology* 7: 483-86; November 1936.
262. SCHROEDEL, E. C. "Potentialities of the New Test Scoring Machine in the Field of Educational and Vocational Guidance." *American Association of Collegiate Registrars Bulletin* 12: 318-21; July 1937.

263. SIMS, V. M. "Note on Scoring the Rearrangement Test." *Journal of Educational Psychology* 28: 302-304; April 1937.
264. SODERQUIST, HAROLD O. "New Method of Weighting Scores in a True-False Test." *Journal of Educational Research* 30: 290-92; December 1936.
265. STENQUIST, J. L. "Devices for Testing." *Nation's Schools* 20: 30-33; November 1937.
266. STENQUIST, J. L. "Experiments with Machine Scoring of Tests." *Baltimore Bulletin of Education* 13: 83-85; September 1935.
267. STRONG, EDWARD K., and CARTER, H. D. "Efficiency Plus Economy in Scoring an Interest Test." *Journal of Educational Psychology* 26: 579-86; November 1935.
268. STRONG, EDWARD K. "The Scoring of Vocational Interest Tests." *Practical Applications of the Punched Card Method in Colleges and Universities*. (Edited by G. W. Baehne.) New York: Columbia University Press, 1935. p. 225-29.
269. TEAGARDEN, F. M. "Method of Interpolating Kent Oral Emergency Test Scores into Mental Age Years and Months." *Journal of Applied Psychology* 21: 468-73; August 1937.
270. Terman, LEWIS M., and MERRILL, MAUD A. "Analysis of Intelligence Test Scores." *Practical Applications of the Punched Card Method in Colleges and Universities*. (Edited by G. W. Baehne.) New York: Columbia University Press, 1935. p. 230-34.
271. TOOPS, HERBERT A. *Directions for Administering and Scoring the Ohio State University Psychological Test, Form 18*. Ohio College Association Bulletin, No. 90. Columbus: Ohio State University. 5 p. (Mimeo.) The bulletin describing Form 20 is now in preparation.
272. TOOPS, HERBERT A. "Questionnaire Construction and Analysis." *Practical Applications of the Punched Card Method in Colleges and Universities*. (Edited by G. W. Baehne.) New York: Columbia University Press, 1935. p. 177-204.
273. VOAS, WILLIAM H. *Manual for the Winnetka Academic Analysis Chart and the Winnetka Chart Form*. Winnetka, Ill.: Winnetka Educational Press, 1938. 51 p.
274. VOAS, WILLIAM H. "The Winnetka Academic Analysis Chart and the Winnetka Chart Form." *Journal of Educational Research* 32: 205-14; November 1938.
275. WOOD, BEN D. "Analysis of College Test Results." *Practical Applications of the Punched Card Method in Colleges and Universities*. (Edited by G. W. Baehne.) New York: Columbia University Press, 1935. p. 205-16.
276. WOOD, BEN D. "Test Scoring by Machine." *Nation's Schools* 20: 34-36; August 1937.
277. ZERILLI, VIRGINIA I. "Note on Scoring Tests of Multiple Weighted Items." *Journal of Educational Psychology* 26: 395-97; May 1935.

Chapter VI. The Educational Measurement Movement in Perspective

A. Developments in Educational Measurement

278. BUCKINGHAM, GUY E., and LEE, RICHARD E. "A Technique for Testing Unified Concepts in Science." *Journal of Educational Research* 30: 20-27; September 1936.
279. CRAWFORD, J. R. "Age and Progress Factors in Test Norms." *Research Studies in Educational Measurements I. Studies in Education*, Vol. 9, No. 4. Iowa City: University of Iowa, 1934. p. 7-39.
280. FLANAGAN, JOHN C. *A Booklet of Norms—Introduction*. New York: Cooperative Test Service (15 Amsterdam Ave.), May 1938. 14 p.
281. FRUTCHY, FRED P. "A Cooperative Program for Developing Tests of the Ability to Use Scientific Method in College Sciences." *Science Education* 22: 81-85; February 1938.
282. GRIM, PAUL R. "A Technique for the Measurement of Attitudes in the Social Studies." *Educational Research Bulletin (Ohio State University)* 15: 95-104; April 1936.
283. LINDQUIST, E. F. "Changing Values in Educational Measurement." *Educational Record* 17: 64-81; Supplement No. 10, October 1936.

284. LINDQUIST, E. F. *The 1938 Iowa Every-Pupil High School Testing Program*. Iowa City: University of Iowa.
285. McDOWELL, JOHN G., and ANDERSON, HOWARD R. "Testing the Ability of Pupils to Outline." *School Review* 46: 48-56; January 1938.
286. NOLL, VICTOR H. "Measuring the Scientific Attitude." *Journal of Abnormal and Social Psychology* 30: 145-54; July 1935.
287. REMMERS, H. H., editor. *Further Studies in Attitudes, Series II. Studies in Higher Education*, No. 31. Lafayette, Ind.: Purdue University, 1936. 298 p.
288. REMMERS, H. H., editor. *Further Studies in Attitudes, Series III. Studies in Higher Education*, No. 34. Lafayette, Ind.: Purdue University, 1938. 151 p.
289. REMMERS, H. H., editor. *Studies in Attitudes. Studies in Higher Education*, No. 26. Lafayette, Ind.: Purdue University, 1934. 112 p.
290. SEGEL, DAVID. *Nature and Use of the Cumulative Record*. U. S. Dept. of the Interior, Office of Education, Bulletin, 1938, No. 3. Washington, D. C.: Government Printing Office, 1938. 48 p.
291. TYLER, RALPH W. "Appraising Progressive Schools." *Educational Method* 15: 412-15; May 1936.
292. WOOD, BEN D. "The Major Strategy of Guidance." *Educational Record* 15: 419-44; October 1934.
293. WOOD, BEN D. "The Need for Comparable Measurements in Individualizing Education." *Educational Record* 20: 14-31; January 1939.
294. WRIGHTSTONE, J. WAYNE. "Measuring the Attainment of Newer Educational Objectives." *Appraising the Elementary-School Program*. Sixteenth Yearbook. Washington, D. C.: Department of Elementary School Principals, National Education Association, 1937. p. 493-501.
295. WRIGHTSTONE, J. WAYNE. "New Tests for New Needs." *Educational Method* 15: 407-11; May 1936.
296. WRIGHTSTONE, J. WAYNE. "Tests for Evaluating Cardinal Objectives of Elementary Education." *Role of Research in Educational Progress*. Official Report of 1937 Meeting. Washington, D. C.: American Educational Research Association, a department of the National Education Association, 1937. p. 126-29.

B. Current Criticisms of Educational Measurement

297. ASHER, E. J. "Inadequacy of Current Intelligence Tests for Testing Kentucky Mountain Children." *Pedagogical Seminary and Journal of Genetic Psychology* 48: 480-86; June 1935.
298. AYER, M. E., and BERNREUTER, R. G. "Study of the Relationship between Discipline and Personality Traits in Little Children." *Pedagogical Seminary and Journal of Genetic Psychology* 50: 165-70; March 1937.
299. BERGEN, GARRET L. "Some Observations on Large Scale Testing." *Journal of Applied Psychology* 20: 249-57; April 1936.
300. BRUMBAUGH, A. J. "Use of Tests and Examinations in the Selection, Guidance, and Retention of Students." *Proceedings, 1936*. Institute for Administrative Officers of Higher Institutions. Chicago: University of Chicago Press, 1936. p. 176-89.
301. BUHLER, C., and HETZER, H. *Testing Children's Development from Birth to School Age*. New York: Farrar and Rinehart, 1935. 191 p.
302. BURKS, BARBARA. "Personality Theories in Relation to Measurement." *Journal of Social Psychology* 7: 140-50; May 1936.
303. CHEYDLEUR, FREDERICK D. "The Case for More Objective Tests in Higher Education." *Education* 57: 408-16; March 1937.
304. COURTIS, S. A. "The Interpretation of Scores in Tests and Examinations." *Journal of Educational Research* 31: 637-49; May 1938.
305. GLADFELTER, MILLARD E. "Status and Trends of College-Entrance Requirements." *School Review* 45: 737-49; December 1937.
306. HEINLEIN, C. P., and HEINLEIN, J. H. "Critique of the Premises and Statistical Methodology of Parapsychology." *Journal of Psychology* 5: 135-48; January 1938.
307. LAUER, A. R. "Fact and Fancy Regarding Driver Testing Procedures." *Journal of Applied Psychology* 21: 173-84; April 1937.

308. ORATA, PEDRO T. "Measurement and Experimentation and Education for Independent Reconstruction." *Journal of Educational Research* 30: 1-13; September 1936.
309. PULLIAS, E. V. "Study of Current Opinion Concerning Objective Tests." *Educational Method* 16: 348-56; April 1937.
310. SACKETT, EVERETT B. "Tale of a Tester." *School and Society* 43: 725-29; May 30, 1936.
311. SCATES, DOUGLAS E. "The Essential Conditions of Measurement." *Psychometrika* 2: 27-34; March 1937.
312. SCATES, DOUGLAS E. "How Science Measures." *Journal of Experimental Education* 5: 296-312; March 1937.
313. SHANNON, J. R., and OTHERS. "Problems That Principals Would Like to Lay Before Parents." *School Review* 45: 364-67; May 1937.
314. THURSTONE, L. L. "Current Misuse of the Factorial Methods." *Psychometrika* 2: 73-76; June 1937.
315. TYLER, RALPH W. "Appraising Progressive Schools." *Educational Method* 15: 412-15; May 1936.

C. Past and Present Trends in Educational Measurement

316. ADKINS, D. C. "Efficiency of Certain Intelligence Tests in Predicting Scholarship Scores." *Journal of Educational Psychology* 28: 129-34; February 1937.
317. BURNHAM, PAUL S., and CRAWFORD, ALBERT B. "The Vocational Interests and Personality Test Scores of a Pair of Dice." *Journal of Educational Psychology* 26: 508-12; October 1935.
318. CLARK, R. C. "Status of the School Mark." *American School Board Journal* 94: 39-40; March 1937.
319. *Conference on Examinations under the Auspices of the Carnegie Corporation, the Carnegie Foundation, the International Institute of Teachers College, Columbia University*. New York: Teachers College, Columbia University, 1936. 300 p.
320. COOPERATIVE TEST SERVICE OF THE AMERICAN COUNCIL ON EDUCATION. *Cooperative Achievement Tests*. New York: the Service, 1936. 39 p.
321. COURTIS, S. A. "What is a Growth Cycle?" *Growth* 1: 155-74; May 1937.
322. DAVENPORT, CHARLES B. "Bodily Growth of Babies During the First Postnatal Year." *Contributions to Embryology*. Publication No. 496. Washington, D. C.: Carnegie Institution of Washington, 1938. p. 271-305.
323. DEARBORN, WALTER F., and OTHERS. *Data on the Growth of Public School Children*. Monographs of the Society for Research in Child Development, Vol. III, No. 1. Washington, D. C.: the Society, National Research Council, 1938. 138 p. (This study contains an annotated bibliography of the Harvard Growth Studies.)
324. EDUCATIONAL RECORDS BUREAU OF THE AMERICAN COUNCIL ON EDUCATION. *1935 Achievement Test Program in Independent Schools*. Bulletin No. 15. New York: the Bureau. 94 p. (Mimeo.)
325. EDUCATIONAL RECORDS BUREAU OF THE AMERICAN COUNCIL ON EDUCATION. *1935 Fall Testing Program in Independent Schools*. Bulletin No. 16. New York: the Bureau. 40 p. (Mimeo.)
326. EMBREE, R. B., JR. "A Cumulative-Record System Based on Permanent Standard Scores for Intelligence Quotient and Achievement." *School Review* 45: 438-46; June 1937.
327. FICKEN, C. E. "Predicting Achievement in the Liberal Arts College." *School and Society* 42: 518-20; October 12, 1935.
328. FRANK, L. K. "The Problem of Child Development." *Child Development* 6: 7-18; March 1935.
329. GUILFORD, J. P. "The Psychophysics of Mental Test Difficulty." *Psychometrika* 2: 121-31; June 1937.
330. HERBST, R. L. "Can Success in High School be Predicted at the End of Grade IX?" *School Review* 45: 508-15; September 1937.

331. HOLZINGER, KARL J.; SWINEFORD, FRANCES; and HARMAN, HARRY. *Student Manual of Factor Analysis*. Chicago: Department of Education, University of Chicago, 1937. 101 p.
332. JONES, GEORGE A. A., and LASLETT, H. R. "The Prediction of Scholastic Success in College." *Journal of Educational Research* 29: 266-71; December 1935.
333. KIMBALL, B. F. "Comparison of Scores of Two Populations under Equalization of Scores of Second Attribute." *Journal of Educational Psychology* 28: 135-43; February 1937.
334. LEITH, J. D. "Error in 'Error in the Use of the Standard Error' by W. R. Van Voorhis." *Journal of Educational Psychology* 27: 556-57; October 1936.
335. OLSEN, W. C., and KOETZLE, V. S. "Amount and Rate of Talking of Young Children." *Journal of Experimental Education* 5: 175-79; December 1936.
336. RATHS, LOUIS E. "Evaluating the Program of a School." *Educational Research Bulletin (Ohio State University)* 17: 57-84; March 16, 1938.
337. RATHS, LOUIS E. "Techniques for Test Construction." *Educational Research Bulletin (Ohio State University)* 17: 85-114; April 13, 1938.
338. RULON, P. J., and OTHERS. "A Personality Rating Schedule." *Harvard Teachers Record* 6: 46-53; February 1936.
339. SOCIETY FOR RESEARCH IN CHILD DEVELOPMENT. *Monographs*. Washington, D. C.: National Research Council, 1936-1938. 16 vols.
340. THURSTONE, L. L. "Ability, Motivation, and Speed." *Psychometrika* 2: 249-54; December 1937.
341. TYLER, RALPH W. "Appraising Progressive Schools." *Educational Method* 15: 412-15; May 1936.
342. VAN ALSTYNE, DOROTHY; HATTWICK, LABERTA W.; and TOTTEN, HELEN. "A New Scale for Rating School Behavior and Attitudes." *Elementary School Journal* 37: 115-21; October 1936.
343. VAN VOORHIS, W. R. "A Reply to J. D. Leith." *Journal of Educational Psychology* 27: 558-60; October 1936.
344. WILLIAMSON, E. G. "Decreasing Accuracy of Scholastic Predictions." *Journal of Educational Psychology* 28: 1-16; January 1937.
345. WOODROW, HERBERT. "The Interrelationship of Conditions of Difficulty." *Journal of General Psychology* 16: 83-130; January 1937.

Chapter VII. Recent Literature on Testing

A. Bibliographies and Summaries

346. BUROS, OSCAR K., editor. *Educational, Psychological, and Personality Tests of 1933, 1934 and 1935*. Studies in Education No. 9. New Brunswick, N. J.: Rutgers University, July 1936. 83 p.
347. BUROS, OSCAR K., editor. *Educational, Psychological, and Personality Tests of 1936*. Studies in Education No. 11. New Brunswick, N. J.: Rutgers University, August 1937. 141 p.
348. BUROS, OSCAR K., editor. *The Nineteen-Thirty-Eight Mental Measurements Yearbook*. New Brunswick, N. J.: Rutgers University, 1938. 415 p.
349. BUROS, OSCAR K., editor. *Research and Statistical Methodology Books and Review, 1933-1938*. New Brunswick, N. J.: Rutgers University Press, 1938. 100 p. (Reprint of a section in reference 348.)
350. *Education Index*. New York: H. W. Wilson Co., published monthly.
351. GRAY, RUTH A., compiler. *Bibliography of Research Studies in Education, 1933-1934*. U. S. Dept. of the Interior, Office of Education, Bulletin, 1935, No. 5. Washington, D. C.: Government Printing Office, 1935. 328 p. (This list of research studies is published annually.)
352. HILDRETH, GERTRUDE H., compiler. *A Bibliography of Mental Tests and Rating Scales*. New York: Psychological Corporation, 1933. 242 p.
353. JONES, VERNON, and BROWN, ROBERT H. "Educational Tests." *Psychological Bulletin* 32: 473-99; July 1935.
354. MALLER, JULIUS B., compiler. *Character and Personality Tests*. New York: Teachers College, Columbia University, 1937. 137 p. (Mimeo.)

355. MONROE, WALTER S., and SHORES, LOUIS. *Bibliographies and Summaries in Education*. New York: H. W. Wilson Co., 1936. 470 p.
356. ODELL, CHARLES W. *Educational Tests for Use in High Schools: A Descriptive Bibliography*. Circular No. 287. Springfield, Ill.: State Department of Public Instruction, 1936. 52 p.
357. ODELL, CHARLES W. *Educational Tests for Use in the Elementary Schools: A Descriptive Bibliography*. Circular No. 288. Springfield, Ill.: State Department of Public Instruction, 1936. 44 p.
358. OSBURN, W. J., chairman. "Educational Tests and Their Uses." *Review of Educational Research* 5: 441-535; December 1935.
359. SMITH, ALBERT H., compiler. *A Bibliography of Canadian Education*. Bulletin No. 10. Toronto, Ont.: University of Ontario, 1938. 302 p.
360. SOUTH, EARL B., compiler. *An Index of Periodical Literature on Testing*. New York: Psychological Corporation, 1937. 286 p.
361. SWINEFORD, FRANCES, and HOLZINGER, KARL J., compilers. "Selected References on Statistics and the Theory of Test Construction (and Factor Analysis)." *Selected References in Education, for 1935, 1936, 1937*. Supplementary Educational Monographs, No. 43, 44, 46. Chicago: University of Chicago Press, 1936-38. 3 vols. (References for 1938, later to be included in monograph, printed in the *School Review* 46: 463-69; June 1938.)
362. SYMONDS, PERCIVAL M. *Psychological Diagnosis in Social Adjustment*. New York: American Book Co., 1934. 362 p.
363. SYMONDS, PERCIVAL M., chairman. "Psychological Tests and Their Uses." *Review of Educational Research* 8: 213-364; June 1938.
364. TRAXLER, ARTHUR E. *The Use of Tests and Rating Devices in the Appraisal of Personality*. Bulletin No. 23. New York: Educational Records Bureau, 1938. 80 p.
365. VERNON, PHILIP E. *The Assessment of Psychological Qualities by Verbal Methods*. Medical Research Council, Industrial Health Research Board, Report No. 83. London: H. M. Stationary Office, 1938. 124 p.
366. WATSON, GOODWIN. "Personality and Character Measurement." *Review of Educational Research* 8: 269-91, 340-52; June 1938.

B. Textbooks on Achievement Testing

367. GREENE, HARRY A., and JORGENSEN, ALBERT N. *The Use and Interpretation of Elementary School Tests*. New York: Longmans, Green and Co., 1935. 530 p.
368. GREENE, HARRY A., and JORGENSEN, ALBERT N. *The Use and Interpretation of High School Tests*. New York: Longmans, Green and Co., 1936. 614 p.
369. HAWKES, HERBERT E.; LINDQUIST, EVERET F.; and MANN, CHARLES R., editors. *The Construction and Use of Achievement Examinations*. Boston: Houghton Mifflin Co., 1936. 496 p.
370. LEE, J. MURRAY. *A Guide to Measurement in Secondary Schools*. New York: D. Appleton-Century Co., 1936. 514 p.
371. NEWKIRK, LOUIS V., and GREENE, HARRY A. *Tests and Measurements in Industrial Education*. New York: John Wiley and Sons, 1935. 253 p.
372. ORLEANS, JACOB S. *Measurement in Education*. New York: Thomas Nelson and Sons, 1937. 461 p.
373. RINSLAND, HENRY D. *Constructing Tests and Grading*. New York: Prentice-Hall, Inc., 1937. 323 p.
374. SMITH, BUNNIE O. *Logical Aspects of Educational Measurement*. New York: Columbia University Press, 1938. 182 p.
375. WRIGHT, WENDELL W. *Visual Outline of Educational Tests and Measurements*. Students Outline Series. New York: Longmans, Green and Co., 1937. 99 p.

C. Literature of Statistical Methods in Test Construction

376. ADKINS, DOROTHY C. *A Job-Analysis of the Toops L-Method for Selecting Test Items*. Bulletin of the Ohio College Association, No. 109. Columbus: the Association (Ohio State University), 1937. p. 2259-68. (Mimeo.)
377. ADKINS, DOROTHY C., and TOOPS, HERBERT A. "Simplified Formulas for Item Selection and Construction." *Psychometrika* 2: 165-71; September 1937.

378. ANDERSON, J. E. "Effect of Item Analysis upon the Discriminative Power of an Examination." *Journal of Applied Psychology* 19: 237-44; June 1935.
379. ARCHER, R. L. "Note on the Theory of the General and Specific Factors in Ability." *British Journal of Educational Psychology* 6: 165-73; June 1936.
380. BARR, A. S., and MILLS, C. N. "Short Method of Calculating the Standard Error of the Difference of the Means of Paired Items." *Journal of Experimental Education* 5: 313-14; March 1937.
381. BIRD, C., and ANDREW, D. M. "Concerning the Length of New-Type Examinations." *Journal of Educational Psychology* 27: 641-54; December 1936.
382. BRESSLER, JOSEPH. *Judgment in Absolute Units as a Psychophysical Method*. Archives of Psychology, No. 152. New York: Columbia University, 1937. 68 p.
383. BROOKS, CLARENCE ADOLPHUS. *The Relative Effectiveness of the Qualified and Unqualified Responses to the New Type Examinations*. Master's thesis, 1936. Boulder: University of Colorado, 1936.
384. CONRAD, H. S. "Note on Johnson O'Connor's Formula for the Standard Error of Measurement." *Journal of Applied Psychology* 19: 725-29; December 1935.
385. DUNLAP, JACK W. "Nomographs for Computing Biserial Correlations." *Psychometrika* 1: 59-60; June 1936.
386. EDCERTON, HAROLD A. "Note on the Computation of the Correlation between Two Lengthened Tests." *Journal of Experimental Education* 5: 289; March 1937.
387. FLEMMING, E. G. "A Factor Analysis of the Personality of High School Leaders." *Journal of Applied Psychology* 19: 596-605; October 1935.
388. FURFEY, PAUL H., and DALY, JOSEPH F. "A Criticism of Factor Analysis as a Technique of Social Research; with Criticism and Rejoinder." *American Sociological Review* 2: 178-86; April 1937.
389. GUILFORD, J. P. "The Determination of Item Difficulty when Chance Success is a Factor." *Psychometrika* 1: 256-64; December 1936.
390. HARMAN, HARRY H. *The Estimation of Factors: B—Systems of Regression, Equations for the Estimation of Factors*. Chicago: University of Chicago.
391. HARTKEMEIER, H. P., and BROWN, L. M. "Multiple Correlation and the Multiple Factor Method." *Journal of Applied Psychology* 20: 396-415; June 1936.
392. HEILMAN, J. D. "K and G Methods of Interpreting the Coefficient of Correlation." *Journal of Educational Psychology* 28: 232-36; March 1937.
393. HOLZINGER, KARL J. "Recent Research on Unitary Mental Traits." *Character and Personality* 4: 335-43; June 1936.
394. HOLZINGER, KARL J., and SWINEFORD, FRANCES. "The Bi-Factor Method." *Psychometrika* 2: 41-54; March 1937.
395. LONG, JOHN A.; SANDIFORD, PETER; and OTHERS. *The Validation of Test Items*. Bulletin of the Department of Educational Research, No. 3. Toronto, Ont.: University of Toronto, 1935. 126 p.
396. MCCLOY, E. "Factor Analysis Methods in the Measurement of Physical Abilities." *American Physical Education Association Research Quarterly* 6: 114-21; Supplement, October 1935.
397. MALINBAUM, W., and BLACK, J. D. "Use of the Short-Cut Graphic Method of Multiple Correlation." *Quarterly Journal of Economics* 52: 66-112; November 1937.
398. MANUEL, H. T. "Testing in the Junior College." *Junior College Journal* 8: 165-70; January 1938.
399. MESSENGER, HELEN R. "An Illustration of New Techniques in Test Construction." *Journal of Applied Psychology* 21: 311-19; June 1937.
400. REXROAD, CARL N. "Factor Analysis of Student Traits." *Journal of Educational Psychology* 28: 153-56; February 1937.
401. RICHARDSON, M. W. "Note on Rationale of Item Analysis." *Psychometrika* 1: 69-76; March 1936.
402. RICHARDSON, M. W. "The Relation between the Difficulty and the Differential Validity of a Test." *Psychometrika* 1: 33-49; June 1936.
403. SWINEFORD, FRANCES, and HOLZINGER, KARL J. "Selected References on Statistics, the Theory of Test Construction, and Factor Analysis." *School Review* 46: 463-69; June 1938.
404. THORNDIKE, R. L. "Factor Analysis of Social and Abstract Intelligence." *Journal of Educational Psychology* 27: 231-33; March 1936.

AMERICAN EDUCATIONAL RESEARCH ASSOCIATION

MEMBERSHIP¹

HONORARY AND LIFE

- Ayres, Leonard P., Vice President, Cleveland Trust Company, Cleveland, Ohio.
Buckingham, B. R., Directing Editor, Elementary School Books, Ginn and Company, Boston, Massachusetts.
Cattell, J. McKeen, Editor, *School and Society*, Garrison, New York.
Hanus, Paul H., Professor of Education Emeritus, Harvard University, Cambridge, Massachusetts. (3 Channing Circle, Cambridge, Massachusetts.)
Judd, Charles H., National Youth Administration, Washington, D. C.
Russell, James E., Dean Emeritus, Teachers College, Columbia University, New York, New York. (R.F.D. 4, Trenton, New Jersey.)
Russell, William F., Dean, Teachers College, Columbia University, New York, New York.
Terman, Lewis M., Professor of Psychology, Stanford University, California.
Thorndike, E. L., Professor of Education, Teachers College, Columbia University, New York, New York.
Wissler, Clark, Curator of Anthropology, American Museum of Natural History, New York, New York.
Zook, George F., President, American Council on Education, Washington, D. C.

ACTIVE

- Ade, Lester Kelly, State Superintendent of Public Instruction, Harrisburg, Pennsylvania.
Aikin, Wilford M., Professor of Education, Ohio State University, Columbus, Ohio.
Alexander, Carter, Library Professor, Teachers College, Columbia University, New York, New York.
Allen, Ira M., Department of Education, Western State Teachers College, Kalamazoo, Michigan.
Alschuler, Rose H., Director, Winnetka Public School Nurseries, Winnetka, Illinois.
Alves, H. F., Senior Specialist in State School Administration, Office of Education, U. S. Department of the Interior, Washington, D. C.
Andersen, C. T., Assistant Director, Department of Research, Board of Education, Detroit, Michigan.
Anderson, Earl W., Professor of Education, Bureau of Educational Research and Department of Education, Ohio State University, Columbus, Ohio.
Anderson, Harold H., Assistant Professor of Psychology, University of Illinois, Urbana, Illinois.
Andrus, Ruth, Chief, Child Development and Parent Education Bureau, State Department of Education, Albany, New York.
Arnold, William E., Assistant Professor of Education, University of Pennsylvania, Philadelphia, Pennsylvania.
Ashbaugh, E. J., Dean, School of Education, Miami University, Oxford, Ohio.
Ayer, Fred C., Professor of Educational Administration, University of Texas, Austin, Texas.
Baer, Joseph A., Director of Research, State Department of Education, Hartford, Connecticut.
Baker, Harry J., Director, Psychological Clinic, Board of Education, Detroit, Michigan.
Bamberger, Florence E., Director of College for Teachers, Johns Hopkins University, Baltimore, Maryland.
Barr, A. S., Professor of Education, University of Wisconsin, Madison, Wisconsin.
Barthelmess, Harriet M., Research Assistant, Bureau of Reference, Research, and Statistics, Board of Education, New York, New York.
Barton, W. A., Jr., Consulting Psychologist, Box 1475, Greenville, South Carolina.
Bayley, Nancy, Research Associate, Institute of Child Welfare, University of California, Berkeley, California.
Beck, Roland L., Professor of Education, Central State Teachers College, Edmond, Oklahoma.

¹ Corrected up to December 1, 1938. Errors should be reported to the Secretary-Treasurer immediately.

- Behrens, H. D.**, Director of Research, State Normal School, Geneseo, New York.
- Benz, H. E.**, Professor of Education, Ohio University, Athens, Ohio.
- Bergman, W. G.**, Director of Research, Board of Education, Detroit, Michigan.
- Betts, Emmett Albert**, Research Professor and Director of the Reading Clinic, Pennsylvania State College, State College, Pennsylvania.
- Betts, Gilbert L.**, Colorado State College, Fort Collins, Colorado.
- Billett, Roy O.**, Professor of Education, Boston University, Boston, Massachusetts.
- Bixler, Harold H.**, Director of Research and Guidance, Atlanta Public Schools, Atlanta, Georgia.
- Boardman, Charles W.**, Professor of Education, University of Minnesota, Minneapolis, Minnesota.
- Booker, Ivan A.**, Assistant Director, Research Division, National Education Association, Washington, D. C. (Address until August 1, 1939, Board of Education, San Diego, California.)
- Bowyer, Vernon**, Sponsor's Director of W.P.A. Education, 228 N. LaSalle Street, Chicago, Illinois.
- Boyer, Philip A.**, Director, Division of Educational Research, Board of Education, Philadelphia, Pennsylvania.
- Branson, Ernest P.**, Supervisor of Educational Research, Board of Education, Long Beach, California.
- Breed, F. S.**, Associate Professor of Education, University of Chicago, Chicago, Illinois.
- Brewton, John E.**, Associate Director, Division of Surveys and Field Studies, George Peabody College for Teachers, Nashville, Tennessee.
- Bright, Ira J.**, Superintendent of Schools, Leavenworth, Kansas.
- Bristow, William H.**, Forum Leader, Office of Education, U. S. Department of the Interior, Washington, D. C.
- Broening, Angela M.**, Assistant Director of Research, Baltimore Public Schools, Baltimore, Maryland.
- Brooks, Fowler D.**, Head, Departments of Education and Psychology, DePauw University, Greencastle, Indiana.
- Brown, Clara M.**, Professor of Home Economics Education, University of Minnesota, Minneapolis, Minnesota.
- Brown, Edwin J.**, Director, Graduate Division, Kansas State Teachers College, Emporia, Kansas.
- Brownell, S. M.**, Professor of Educational Administration, Graduate School, Yale University, New Haven, Connecticut.
- Brownell, W. A.**, Professor of Educational Psychology, Duke University, Durham, North Carolina.
- Brueckner, Leo J.**, Professor of Education, University of Minnesota, Minneapolis, Minnesota.
- Brumbaugh, A. J.**, Dean of the College and Professor of Education, University of Chicago, Chicago, Illinois.
- Brunner, Edmund deS.**, Professor in Charge of Rural Sociology, Columbia University, New York, New York.
- Buckner, C. A.**, Professor of Education, University of Pittsburgh, Pittsburgh, Pennsylvania.
- Burke, Arvid J.**, Director, Studies and Information Service, New York State Teachers Association, Albany, New York.
- Buros, Oscar K.**, Assistant Professor of Education, Rutgers University, New Brunswick, New Jersey.
- Burr, Samuel Engle**, Superintendent of Schools, New Castle, Delaware.
- Bursch, James F.**, Assistant Superintendent of Schools, Sacramento, California.
- Buswell, G. T.**, Professor of Educational Psychology, University of Chicago, Chicago, Illinois.
- Butsch, R. L. C.**, Associate Professor of Education, Graduate School, Marquette University, Milwaukee, Wisconsin.
- Butterworth, Julian E.**, Director, Graduate School of Education, Cornell University, Ithaca, New York.
- Caldwell, Otis W.**, General Secretary, American Association for the Advancement of Science, New Milford, Connecticut.
- Cammack, Hon. James W., Jr.**, Judge, Kentucky Court of Appeals, Frankfort, Kentucky.

- Campbell, Doak S.**, Dean of the Graduate School and Director of Senior College, George Peabody College for Teachers, Nashville, Tennessee.
- Carpenter, W. W.**, Professor of Education, University of Missouri, Columbia, Missouri.
- Carr, William G.**, Director, Research Division, National Education Association, Washington, D. C.
- Caswell, Hollis L.**, Professor of Education, Teachers College, Columbia University, New York, New York.
- Cattell, Psyche**, Research Fellow, Department of Child Hygiene, Harvard University, Cambridge, Massachusetts.
- Certain, C. C.**, Editor and Publisher, *The Elementary English Review*, Box 67, North End Station, Detroit, Michigan.
- Chambers, M. M.**, Staff Member, American Youth Commission, Washington, D. C.
- Chapman, Harold B.**, Assistant Director, Bureau of Educational Research, Baltimore Public Schools, Baltimore, Maryland.
- Charters, W. W.**, Director, Bureau of Educational Research, Ohio State University, Columbus, Ohio.
- Chase, Vernon Emory**, Director, Bureau of Educational Results and Research, Public Schools, Dearborn, Michigan.
- Chisholm, Leslie L.**, Associate Professor of Education, State College of Washington, Pullman, Washington.
- Christofferson, H. C.**, Professor of Mathematics and Director of Secondary Education, Miami University, Oxford, Ohio.
- Clark, Harold F.**, Professor of Education, Teachers College, Columbia University, New York, New York.
- Clark, Zenas R.**, Administrative Assistant, Wilmington Public Schools, Wilmington, Delaware.
- Clem, Orlie M.**, School of Education, New York University, New York, New York.
- Cocking, Walter D.**, Dean of the College of Education, University of Georgia, Athens, Georgia.
- Coffey, Wilford L.**, Route No. 2, Lake City, Michigan.
- Connor, William L.**, Superintendent of Schools, Allentown, Pennsylvania.
- Conrad, Herbert S.**, Research Associate, Institute of Child Welfare, University of California, Berkeley, California.
- Cooke, Dennis H.**, Professor of School Administration, George Peabody College for Teachers, Nashville, Tennessee.
- Coon, Beulah I.**, Agent in Studies in Home Economics Education, Office of Education, U. S. Department of the Interior, Washington, D. C.
- Cooper, Lewis B.**, Director of Research, Texas State Teachers Association, Fort Worth, Texas.
- Corey, Stephen M.**, Professor of Education, University of Wisconsin, Madison, Wisconsin.
- Cornell, Ethel L.**, Research Associate, State Department of Education, Albany, New York.
- Cornell, F. G.**, Research Associate in School Administration, Teachers College, Columbia University, New York, New York.
- Counts, George S.**, Professor of Education, Teachers College, Columbia University, New York, New York.
- Courtis, S. A.**, Professor of Education, University of Michigan, Ann Arbor, Michigan.
- Coxe, W. W.**, Director, Educational Research Division, State Department of Education, Albany, New York.
- Coy, Genevieve L.**, Psychologist, Dalton School, New York, New York.
- Craig, Gerald S.**, Associate Professor of Natural Sciences, Teachers College, Columbia University, New York, New York.
- Crawford, C. C.**, Professor of Education, University of Southern California, Los Angeles, California.
- Cummings, Helen F.**, Department of Educational Investigation and Measurement, Boston Public Schools, Boston, Massachusetts.
- Cureton, Edward E.**, Professor of Education, Alabama Polytechnic Institute, Auburn, Alabama.
- Cureton, Thomas K., Jr.**, Acting Director of Graduate Division, Springfield College, Springfield, Massachusetts.

- Cutright, Prudence**, Assistant Superintendent, Minneapolis Public Schools, Minneapolis, Minnesota.
- Cutts, Norma E.**, Supervisor, Department of Exceptional Children, Board of Education, New Haven, Connecticut.
- Dale, Edgar**, Associate Professor of Education, Ohio State University, Columbus, Ohio.
- Davis, Hazel**, Assistant Director, Research Division, National Education Association, Washington, D. C.
- Davis, Mary Dabney**, Senior Specialist, Nursery-Kindergarten-Primary Education, Office of Education, U. S. Department of the Interior, Washington, D. C.
- Davis, Robert A.**, Professor of Education, University of Colorado, Boulder, Colorado.
- Dawson, Howard A.**, Director of Rural Service, National Education Association, Washington, D. C.
- Dearborn, Ned H.**, Dean, Division of General Education, New York University, New York, New York.
- deBeck, Ethel R.**, Director of Research, Board of Education, Newark, New Jersey.
- Deffenbaugh, Walter S.**, Chief, American School Systems Division, Office of Education, U. S. Department of the Interior, Washington, D. C.
- Detchen, Lily**, Research Assistant, Progressive Education Association Evaluation Staff, University of Chicago, Chicago, Illinois.
- DeVoss, James C.**, Dean, Upper Division, San Jose State College, San Jose, California.
- Dolch, E. W.**, Assistant Professor of Education, University of Illinois, Urbana, Illinois.
- Douglass, Harl R.**, Head, Division of Education, University of North Carolina, Chapel Hill, North Carolina.
- Downing, Elliot R.**, Associate Professor Emeritus, the Teaching of Science, University of Chicago, Chicago, Illinois. (P. O. Box 147, Williams Bay, Wisconsin.)
- Downs, Martha**, Director of Research, New Jersey State Teachers College, Newark, New Jersey.
- Dreese, Mitchell**, Professor of Educational Psychology, George Washington University, Washington, D. C.
- Dunlap, Jack W.**, Associate Professor of Education, University of Rochester, Rochester, New York.
- Durost, Walter N.**, Director, Department of Research and Test Service, World Book Company, Yonkers, New York.
- Durrell, Donald D.**, Professor of Education, Boston University, Boston, Massachusetts.
- Eads, Laura Krieger**, Research Assistant, Bureau of Reference, Research, and Statistics, Board of Education, New York, New York.
- Easley, Howard**, Assistant Professor of Educational Psychology, Duke University, Durham, North Carolina.
- Eckert, Ruth E.**, Associate Professor and Research Evaluator, University of Minnesota, Minneapolis, Minnesota.
- Edmiston, Robert Wentz**, Professor of Education, Miami University, Oxford, Ohio.
- Edmonson, James B.**, Dean, School of Education, University of Michigan, Ann Arbor, Michigan.
- Edwards, Newton**, Professor of Education, University of Chicago, Chicago, Illinois.
- Eells, Walter C.**, Executive Secretary, American Association of Junior Colleges, Washington, D. C.
- Ellingson, Mark**, President, Rochester Athenaeum and Mechanics Institute, Rochester, New York.
- Elliott, Charles H.**, Commissioner of Education for New Jersey, Trenton, New Jersey.
- Elliott, Eugene B.**, State Superintendent of Public Instruction, Lansing, Michigan.
- Elsbree, Willard S.**, Professor of Education, Teachers College, Columbia University, New York, New York.
- Engelhardt, N. L.**, Professor of Education, Teachers College, Columbia University, New York, New York.
- Enlow, E. R.**, Director of Statistics and Special Services, Atlanta Public Schools, Atlanta, Georgia.
- Eurich, Alvin C.**, Professor of Education, Stanford University, California.
- Evenden, Edward S.**, Professor of Education, Teachers College, Columbia University, New York, New York.
- Farnsworth, Philo T.**, Assistant Superintendent of Schools, Granite School District, Salt Lake City, Utah.

- Feder, Daniel D.**, Assistant Director, Personnel Bureau, and Assistant Professor of Psychology, University of Illinois, Urbana, Illinois.
- Ferriss, Emery N.**, Professor of Rural Education, Cornell University, Ithaca, New York.
- Flanagan, John C.**, Assistant Director, Cooperative Test Service of the American Council on Education, 500 West 116th Street, New York, New York.
- Flemming, Cecile White**, Director of Individual Development and Guidance, Horace Mann School, Teachers College, Columbia University, New York, New York.
- Foote, John M.**, Director, Reference and Service, State Department of Education, Baton Rouge, Louisiana.
- Foster, Richard R.**, Assistant Director, Research Division, National Education Association, Washington, D. C.
- Fowlkes, John Guy**, Professor of Education, University of Wisconsin, Madison, Wisconsin.
- Fox, Guy**, Assistant Director, Research and Curriculum, Denver Public Schools, Denver, Colorado.
- Franklin, E. Earle**, Associate in Education, Johns Hopkins University, Baltimore, Maryland.
- Fraser, Mowat G.**, Dean, Winthrop College, Rock Hill, South Carolina.
- Frederick, Orie I.**, Director of Curriculum Programs at Saginaw and Battle Creek, Saginaw City Schools, Saginaw, Michigan.
- Freeman, Frank N.**, Professor of Educational Psychology, University of Chicago, Chicago, Illinois.
- Fritz, Ralph A.**, Professor of Education, Kansas State Teachers College, Pittsburg, Kansas.
- Frostic, Fred W.**, Superintendent of Schools, Wyandotte, Michigan.
- Frutchey, Fred P.**, Senior Educational Analyst, Extension Studies and Teaching, U. S. Department of Agriculture, Washington, D. C.
- Fryklund, Verne C.**, Associate Professor of Industrial Education, Wayne University, Detroit, Michigan.
- Fulk, Joseph Richard**, Professor of Public School Administration, University of Florida, Gainesville, Florida.
- Gambrill, Bessie Lee**, Associate Professor of Elementary Education, Yale University, New Haven, Connecticut.
- Ganders, Harry S.**, Dean, School of Education, Syracuse University, Syracuse, New York.
- Garrison, K. C.**, Professor of Psychology, University of North Carolina, Raleigh, North Carolina.
- Garrison, S. C.**, Professor of Psychology and President, George Peabody College for Teachers, Nashville, Tennessee.
- Garver, F. M.**, Professor of Elementary Education, University of Pennsylvania, Philadelphia, Pennsylvania.
- Gates, Arthur I.**, Professor of Education, Teachers College, Columbia University, New York, New York.
- Gerberich, J. R.**, Assistant Professor of Education, Connecticut State College, Storrs, Connecticut.
- Geyer, Denton L.**, Head, Department of Education and Psychology, Chicago Teachers College, Chicago, Illinois.
- Gifford, C. W.**, Department of Education, Chicago Teachers College, Chicago, Illinois.
- Gillet, Harry O.**, Principal, Elementary School, University of Chicago, Chicago, Illinois.
- Gilmore, Charles H.**, Director of Research, State Department of Education, Nashville, Tennessee.
- Goldthorpe, J. Harold**, Research Associate in School Administration, Teachers College, Columbia University, New York, New York.
- Good, Carter V.**, Professor of Education, Teachers College, University of Cincinnati, Cincinnati, Ohio.
- Good, H. G.**, Professor of Education, Ohio State University, Columbus, Ohio.
- Goodrich, T. V.**, Director of Research, City Public Schools, Lincoln, Nebraska.
- Goodykoontz, Bess**, Assistant Commissioner of Education, Office of Education, U. S. Department of the Interior, Washington, D. C.
- Gordon, Hans C.**, Special Assistant to the Director of Educational Research, Board of Education, Philadelphia, Pennsylvania.

- Grant, Albert**, Statistician, Cincinnati Public Schools, Cincinnati, Ohio.
- Gray, C. T.**, Professor of Educational Psychology, University of Texas, Austin, Texas.
- Gray, Howard A.**, Director of Field Studies, Erpi Classroom Films, Inc., Long Island City, New York.
- Gray, Robert Floyd**, Deputy Superintendent of Schools, San Francisco, California.
- Gray, William S.**, Professor of Education, University of Chicago, Chicago, Illinois.
- Greenberg, Benjamin B.**, Assistant Superintendent of Schools, New York, New York.
- Greene, Crawford**, Director of Information and Research, State Department of Education, Little Rock, Arkansas.
- Greene, H. A.**, Director, Bureau of Educational Research and Service, State University of Iowa, Iowa City, Iowa.
- Greene, Katharine B.**, Director, The Greene School, Ann Arbor, Michigan.
- Greenleaf, Walter James**, Specialist, Occupational Information and Guidance, Office of Education, U. S. Department of the Interior, Washington, D. C.
- Gregory, Marshall**, Director of Financial Research, State Department of Education, Oklahoma City, Oklahoma.
- Grizzell, E. D.**, Professor of Secondary Education, University of Pennsylvania, Philadelphia, Pennsylvania. (Address until July 1, 1939, American Council on Education, Washington, D. C.)
- Grossnickle, Foster E.**, Professor of Mathematics, New Jersey State Teachers College, Jersey City, New Jersey.
- Grover, Elbridge C.**, Superintendent of Schools, Euclid, Ohio.
- Guiler, Walter S.**, Professor of Education, Miami University, Oxford, Ohio.
- Hanson, Whittier L.**, Professor of Education, Boston University, Boston, Massachusetts.
- Harap, Henry**, Associate Director, Division of Surveys and Field Studies, George Peabody College for Teachers, Nashville, Tennessee.
- Harrington, H. L.**, Supervising Director, Intermediate Schools, Board of Education, Detroit, Michigan.
- Harry, David P., Jr.**, Professor of Education, Graduate School, Western Reserve University, Cleveland, Ohio.
- Hartmann, George W.**, Associate Professor of Education, Teachers College, Columbia University, New York, New York.
- Hawkins, Gertrude C.**, Educational Research Assistant, Board of Education, Cleveland, Ohio.
- Heaton, Kenneth L.**, Director, Cooperative Bureau for Educational Research, Lansing, Michigan.
- Heck, Arch O.**, Professor of Education, Ohio State University, Columbus, Ohio.
- Heilman, J. D.**, Director of Personnel, Colorado State College of Education, Greeley, Colorado.
- Henmon, V. A. C.**, Professor of Psychology, University of Wisconsin, Madison, Wisconsin.
- Herrick, John H.**, Director of Research, Shaker Heights Board of Education, Cleveland, Ohio.
- Hertzberg, Oscar Edward**, Head, Department of Psychology and Director of Research, State Teachers College, Buffalo, New York.
- Hertzler, Silas**, Director of Teacher Training, Goshen College, Goshen, Indiana.
- Hicks, J. Allan**, Professor of Education, New York State College for Teachers, Albany, New York.
- Hildreth, Gertrude**, Psychologist, Lincoln School of Teachers College, Columbia University, New York, New York.
- Hill, George E.**, Assistant Professor of Education, University of Pennsylvania, Philadelphia, Pennsylvania.
- Hoban, Charles F., Jr.**, Director, Motion Picture Project, American Council on Education, Washington, D. C.
- Hockett, John A.**, Department of Education, University of California, Berkeley, California.
- Hoke, K. J.**, Dean, Summer Session, College of William and Mary, Williamsburg, Virginia.
- Holley, J. Andrew**, Director of Curriculum, State Department of Education, Oklahoma City, Oklahoma.

- Hollingsworth, Leta S.**, Professor of Education, Teachers College, Columbia University, New York, New York.
- Holy, T. C.**, Professor of Education, Bureau of Educational Research, Ohio State University, Columbus, Ohio.
- Holzinger, Karl J.**, Professor of Education, University of Chicago, Chicago, Illinois.
- Hopkins, L. Thomas**, Professor of Education, Teachers College, Columbia University, New York, New York.
- Horan, Ellamay**, Professor of Education, DePaul University, Chicago, Illinois.
- Horn, Ernest**, Professor of Education, State University of Iowa, Iowa City, Iowa.
- Hubbard, Frank W.**, Associate Director, Research Division, National Education Association, Washington, D. C.
- Hughes, W. Hardin**, Professor of Philosophy and Psychology, Pasadena Junior College, Pasadena, California.
- Hurd, A. W.**, Dean of Hamline University, St. Paul, Minnesota.
- Hutchins, H. C.**, Assistant Secretary, Educational Policies Commission, Washington, D. C.
- Hyde, Richard E.**, Director of Research, State Department of Education, Charleston, West Virginia.
- Irby, Nolen M.**, Director of Field Studies and Professor of Education, University of Georgia, Athens, Georgia.
- Irwin, Manley E.**, Director of Instruction, Board of Education, Detroit, Michigan.
- Jacobs, Clara M.**, Director of Educational Research, Centennial High School Building, Pueblo, Colorado.
- Jacobson, P. B.**, Principal, University of Chicago High School, Chicago, Illinois.
- Jarvie, L. L.**, Chairman, Educational Research Committee, Rochester Athenaeum and Mechanics Institute, Rochester, New York.
- Jensen, Kai**, Associate Professor of Education, University of Wisconsin, Madison, Wisconsin.
- Jersild, Arthur T.**, Professor of Education, Teachers College, Columbia University, New York, New York.
- Jessen, Carl A.**, Senior Specialist in Secondary Education, Office of Education, U. S. Department of the Interior, Washington, D. C.
- Job, Leonard B.**, President, Ithaca College, Ithaca, New York.
- Johnson, B. Lamar**, Librarian and Dean of Instruction, Stephens College, Columbia, Missouri.
- Johnson, J. T.**, Head, Department of Mathematics, Chicago Teachers College, Chicago, Illinois.
- Johnson, Loaz W.**, 14 Oak Court, Palo Alto, California.
- Johnson, Palmer O.**, Professor of Education, University of Minnesota, Minneapolis, Minnesota.
- Johnston, Edgar Grant**, Principal, University High School, University of Michigan, Ann Arbor, Michigan.
- Jones, Arthur J.**, Professor of Secondary Education, University of Pennsylvania, Philadelphia, Pennsylvania.
- Jones, Harold E.**, Director, Institute of Child Welfare, University of California, Berkeley, California.
- Jones, Vernon**, Professor of Educational Psychology, Clark University, Worcester, Massachusetts.
- Jordan, A. M.**, Professor of Educational Psychology, University of North Carolina, Chapel Hill, North Carolina.
- Joyal, Arnold E.**, Professor of Education, University of Denver, Denver, Colorado.
- Kawin, Ethel**, Director of Guidance, Glencoe Public Schools, Glencoe, Illinois.
- Kearney, Leo I.**, Assistant Director, Reference, Research, and Statistics, Board of Education, New York, New York.
- Keeler, L. W.**, Associate Professor of Educational Psychology, University of Michigan, Ann Arbor, Michigan.
- Keener, E. E.**, Principal, John Hay School, Chicago, Illinois.
- Kelley, Truman L.**, Professor of Education, Graduate School of Education, Harvard University, Cambridge, Massachusetts.
- Kelley, Victor H.**, Director of Appointments, University of Arizona, Tucson, Arizona.

- Kelly, Fred J.**, Chief, Division of Higher Education, Office of Education, U. S. Department of the Interior, Washington, D. C.
- Kemmerer, W. W.**, Director of Child Accounting and Curriculum, Independent School District, and Vice President, University of Houston, Houston, Texas.
- Keys, Noel**, Professor of Education, University of California, Berkeley, California.
- King, LeRoy A.**, Professor of Educational Administration, University of Pennsylvania, Philadelphia, Pennsylvania.
- Kingsley, John H.**, Director, Division of Research, Board of Education, Albany, New York.
- Kirby, T. J.**, Professor of Education, State University of Iowa, Iowa City, Iowa.
- Knight, F. B.**, Director, Division of Education and Applied Psychology, Purdue University, Lafayette, Indiana.
- Knight, James**, Associate Professor of Educational Psychology, University of Texas, Austin, Texas.
- Knudsen, Charles W.**, Professor of Secondary Education, George Peabody College for Teachers, Nashville, Tennessee.
- Koch, Harlan C.**, Assistant Director, Bureau of Cooperation, University of Michigan, Ann Arbor, Michigan.
- Koopman, G. Robert**, Assistant Superintendent in Charge of Instruction, State Department of Public Instruction, Lansing, Michigan.
- Koos, L. V.**, Professor of Secondary Education, University of Chicago, Chicago, Illinois.
- Kotschnig, Walter M.**, Professor of Education, Smith College, Northampton, Massachusetts, and Mount Holyoke College, South Hadley, Massachusetts.
- Kramer, Grace A.**, Baltimore Public Schools, Baltimore, Maryland.
- Kyte, George C.**, Professor of Education, University of California, Berkeley, California.
- Larson, Emil L.**, Professor of Education, University of Arizona, Tucson, Arizona.
- LaSalle, Jessie**, Assistant Superintendent in Charge of Educational Research, D. C. Public Schools, Washington, D. C.
- Latham, O. R.**, President, Iowa State Teachers College, Cedar Falls, Iowa.
- Lazar, May**, Research Assistant, Bureau of Reference, Research, and Statistics, Board of Education, New York, New York.
- Lee, J. Murray**, Assistant Professor of Education, University of Wisconsin, Madison, Wisconsin.
- Lehman, Harvey C.**, Professor of Psychology, Ohio University, Athens, Ohio.
- Lentz, Theodore F.**, Associate Professor of Education, Washington University, St. Louis, Missouri.
- Leonard, J. Paul**, Associate Professor of Education, Stanford University, California.
- Lide, Edwin Scott**, Sullivan High School, Chicago, Illinois.
- Lincoln, Edward A.**, Consulting Psychologist, Thompson Street, Halifax, Massachusetts.
- Lindquist, E. F.**, Professor of Education, State University of Iowa, Iowa City, Iowa.
- Linn, Henry H.**, Superintendent, Buildings and Grounds, Teachers College, Columbia University, New York, New York.
- Loomis, Arthur K.**, Superintendent of Schools, Shaker Heights, Ohio.
- Lovejoy, Philip**, First Assistant Secretary, Rotary International, Chicago, Illinois.
- Mackintosh, Helen K.**, Senior Specialist in Elementary Education, Office of Education, U. S. Department of the Interior, Washington, D. C.
- MacLatchy, Josephine**, Bureau of Educational Research, Ohio State University, Columbus, Ohio.
- Madsen, I. N.**, Director, Department of Tests and Measurements, Lewiston State Normal School, Lewiston, Idaho.
- Mallory, Clara**, Senior Field Supervisor of Adult Education, Jefferson County, Beaumont, Texas.
- Mann, Carleton H.**, Lecturer in Education, University of Southern California, Los Angeles, California.
- Manuel, H. T.**, Professor of Educational Psychology, University of Texas, Austin, Texas.
- Masters, Harry V.**, President, Albright College, Reading, Pennsylvania.
- Mathews, C. O.**, Professor of Education, Ohio Wesleyan University, Delaware, Ohio.

- Maul, Ray C.**, Director of Extension and Associate Professor of Education, Kansas State Teachers College, Emporia, Kansas.
- McCall, William A.**, Professor of Education, Teachers College, Columbia University, New York, New York.
- McClure, Worth**, Superintendent of Schools, Seattle, Washington.
- McConnell, T. R.**, Professor of Education, University of Minnesota, Minneapolis, Minnesota.
- McDowell, Elizabeth D.**, Lanaska, Pennsylvania.
- McLaughlin, Katherine L.**, Professor of Education, University of California at Los Angeles, Los Angeles, California.
- McLure, John R.**, Professor of School Administration and Director of Summer School, University of Alabama, University, Alabama.
- Mead, A. R.**, Director of Educational Research, University of Florida, Gainesville, Florida.
- Meek, Lois Hayden**, Professor of Education, Teachers College, Columbia University, New York, New York.
- Melby, Ernest O.**, Dean, School of Education, Northwestern University, Evanston, Illinois.
- Melcher, George**, Superintendent of Schools, Kansas City, Missouri.
- Mendenhall, James E.**, Research Associate, Lincoln School of Teachers College, Columbia University, New York, New York.
- Meriam, Junius L.**, Professor of Education, University of California, Los Angeles, California.
- Merriman, Curtis**, Registrar, University of Wisconsin, Madison, Wisconsin.
- Miller, Chester F.**, Superintendent of Schools, Saginaw, Michigan.
- Miller, W. S.**, Acting Dean of the Graduate School and Professor of Educational Psychology, University of Minnesota, Minneapolis, Minnesota.
- Moehlman, Arthur B.**, Professor of School Administration and Supervision, University of Michigan, Ann Arbor, Michigan.
- Monroe, Walter S.**, Director, Bureau of Educational Research, University of Illinois, Urbana, Illinois.
- Moore, Clyde B.**, Professor in Graduate School of Education, Cornell University, Ithaca, New York.
- Morgan, Walter E.**, Assistant Superintendent of Public Instruction, State Department of Public Instruction, Sacramento, California.
- Mornebeck, Carl D.**, Chief, Division of Child Accounting and Research, State Department of Public Instruction, Harrisburg, Pennsylvania.
- Morphet, Edgar L.**, Director of Administration and Finance, State Department of Public Instruction, Tallahassee, Florida.
- Morphett, Mabel Vogel**, Director of Research, Skokie School, Winnetka, Illinois.
- Morrison, J. Cayce**, Assistant Commissioner for Research, State Department of Education, Albany, New York.
- Mort, Paul R.**, Professor of Education, Teachers College, Columbia University, New York, New York.
- Morton, R. L.**, Professor of Education, Ohio University, Athens, Ohio.
- Mosher, Raymond M.**, Professor of Psychology, San Jose State College, San Jose, California.
- Munson, Saron E.**, Director of Research, School District of Lancaster, Lancaster, Pennsylvania.
- Myers, Anna G.**, Assistant Director of Research, Public Schools, Kansas City, Missouri.
- Myers, C. E.**, Supervisor, Division of Research and Finance, State Board of Education, Richmond, Virginia.
- Myers, Garry C.**, Head, Department of Parent Education, Cleveland College, Western Reserve University, Cleveland, Ohio.
- Neale, M. G.**, Professor of Educational Administration, University of Minnesota, Minneapolis, Minnesota.
- Nelson, M. J.**, Dean of the Faculty, Iowa State Teachers College, Cedar Falls, Iowa.
- Nelson, Milton G.**, Dean, New York State College for Teachers, Albany, New York.
- Newkirk, Louis V.**, Director, Bureau of Handwork and Industrial Arts Education, Chicago Public Schools, Chicago, Illinois.
- Newland, T. Ernest**, Chief, Special Education, State Department of Public Instruction, Harrisburg, Pennsylvania.

- Nifenecker, Eugene A.**, Director, Bureau of Reference, Research, and Statistics, Board of Education, New York, New York.
- Noble, Stuart G.**, Professor of Education, Tulane University, New Orleans, Louisiana.
- Noll, Victor H.**, Associate Professor of Education, Michigan State College, Lansing, Michigan.
- Norton, John K.**, Professor of Education, Teachers College, Columbia University, New York, New York.
- Norton, Mrs. John K.**, 464 Riverside Drive, Apt. 91, New York, New York.
- OBrien, F. P.**, Director, Bureau of School Service and Research, University of Kansas, Lawrence, Kansas.
- Odell, C. W.**, Associate Professor of Education, University of Illinois, Urbana, Illinois.
- Ogan, R. W.**, Dean of the College, Professor of Education, Muskingum College, New Concord, Ohio.
- Ojemann, Ralph H.**, Assistant Professor, Child Welfare Research Station, State University of Iowa, Iowa City, Iowa.
- Olson, Willard C.**, Director of Research in Child Development, University of Michigan, Ann Arbor, Michigan.
- Oppenheimer, J. J.**, Dean of the College of Liberal Arts, University of Louisville, Louisville, Kentucky.
- O'Rear, F. B.**, Professor of Education, Teachers College, Columbia University, New York, New York.
- Orleans, Jacob S.**, Associate Professor of Education, College of the City of New York, New York, New York.
- O'Rourke, L. J.**, Director of Research, U. S. Civil Service Commission, Washington, D. C.
- Osburn, W. J.**, Professor of Education, University of Washington, Seattle, Washington.
- Otis, Arthur S.**, Psychological Consultant, World Book Company, Yonkers, New York.
- Otto, Henry J.**, Consultant in Education, W. K. Kellogg Foundation, Battle Creek, Michigan.
- Parsons, Rhey Boyd**, Rankin Apartments, Jefferson Street, Paducah, Kentucky.
- Paul, Joseph B.**, Director, Bureau of Research, Iowa State Teachers College, Cedar Falls, Iowa.
- Peik, W. E.**, Dean and Professor of Education, College of Education, University of Minnesota, Minneapolis, Minnesota.
- Perry, Winona M.**, Professor of Educational Psychology and Measurements, University of Nebraska, Lincoln, Nebraska.
- Peters, Charles C.**, Director of Educational Research, Pennsylvania State College, State College, Pennsylvania.
- Peterson, Elmer T.**, Professor of Education, State University of Iowa, Iowa City, Iowa.
- Phillips, Albert J.**, Executive Secretary, Michigan Education Association, Lansing, Michigan.
- Potter, Mary A.**, Supervisor of Mathematics, Washington Park High School, Racine, Wisconsin.
- Potthoff, Edward F.**, Educational Consultant in the Office of the Provost, University of Illinois, Urbana, Illinois.
- Powers, Samuel Ralph**, Professor of Natural Sciences, Teachers College, Columbia University, New York, New York.
- Prall, Charles E.**, Dean, School of Education, University of Pittsburgh, Pittsburgh, Pennsylvania.
- Prescott, Daniel A.**, Professor of Education, Rutgers University, New Brunswick, New Jersey.
- Pressey, S. L.**, Professor of Educational Psychology, Ohio State University, Columbus, Ohio.
- Price, Malcolm P.**, Chairman, Personnel Committee, Board of Education, Detroit, Michigan.
- Proffitt, Maris M.**, Educational Consultant and Specialist in Guidance, Office of Education, U. S. Department of the Interior, Washington, D. C.
- Rankin, Paul T.**, Supervising Director of Research and Informational Service, Board of Education, Detroit, Michigan.
- Reavis, W. C.**, Professor of Education, University of Chicago, Chicago, Illinois.

- Reed, H. B.**, Professor of Psychology, Fort Hays Kansas State College, Hays, Kansas.
Reeder, Ward G., Professor of School Administration, Ohio State University, Columbus, Ohio.
Reeves, Floyd W., Professor of Administration, University of Chicago, Chicago, Illinois.
Remmers, H. H., Professor of Education and Psychology, Purdue University, Lafayette, Indiana.
Remmlein, Madaline Kinter, Research Assistant, National Education Association, Washington, D. C.
Reusser, Walter C., Professor of Education, University of Wyoming, Laramie, Wyoming.
Richardson, H. D., Director of Research, Highland Park High School, Highland Park, Illinois.
Richey, Herman G., Assistant Professor of Education, University of Chicago, Chicago, Illinois.
Rinsland, H. D., Professor of School Measurements, University of Oklahoma, Norman, Oklahoma.
Rogers, Don C., Director, Bureau of Research and Building Survey, Board of Education, Chicago, Illinois.
Rosander, A. C., Statistician, U. S. Bureau of Labor Statistics, Washington, D. C.
Rothney, John W. M., Lecturer in Education, Harvard University, Cambridge, Massachusetts.
Rowland, W. T., Jr., Assistant Superintendent in Charge of Secondary Education, Louisville Public Schools, Louisville, Kentucky.
Ruch, G. M., Consultant, Occupational Information and Guidance Service, Office of Education, U. S. Department of the Interior, Washington, D. C.
Rugg, Earle U., Head, Department of Education, Colorado State College of Education, Greeley, Colorado.
Rulon, Phillip J., Assistant Professor, Graduate School of Education, Harvard University, Cambridge, Massachusetts.
Russell, John Dale, Professor of Education, University of Chicago, Chicago, Illinois.
Sackett, Everett B., Associate Registrar and Associate Professor of Education, University of New Hampshire, Durham, New Hampshire.
Sangren, Paul V., President, Western State Teachers College, Kalamazoo, Michigan.
Sawyer, Guy E., Chadds Ford, Pennsylvania.
Scates, Douglas E., Director of School Research, Cincinnati Public Schools, Cincinnati, Ohio.
Schlesser, George E., Instructor in Education, Colgate University, Hamilton, New York.
Schorling, Raleigh, Professor of Education and Director of Instruction, University High School, University of Michigan, Ann Arbor, Michigan.
Schrammel, H. E., Director, Bureau of Educational Measurements, Kansas State Teachers College, Emporia, Kansas.
Sears, Jesse B., Professor of Education, Stanford University, California.
Segel, David, Specialist, Tests and Measurements, Office of Education, U. S. Department of the Interior, Washington, D. C.
Senour, A. C., Assistant Superintendent, Public Schools, East Chicago, Indiana.
Shea, James T., Director of Research, Board of Education, San Antonio, Texas.
Simpson, Alfred D., Assistant Commissioner of Education for Finance, State Department of Education, Albany, New York.
Simpson, B. R., Professor of Educational Psychology, Western Reserve University, Cleveland, Ohio.
Sims, Verner M., Associate Professor of Psychology, University of Alabama, University, Alabama.
Singleton, Gordon G., President, Mary Hardin-Baylor College, Belton, Texas.
Smith, C. Currien, Assistant Professor of Education, New York State College for Teachers, Albany, New York.
Smith, Dora V., Professor of Education, University of Minnesota, Minneapolis, Minnesota.
Smith, H. L., Dean, School of Education, Indiana University, Bloomington, Indiana.
Smith, Harry P., Professor of Education, Syracuse University, Syracuse, New York.

- Snyder, Agnes**, Assistant Professor of Education, Teachers College, Columbia University, New York, New York.
- Soper, Wayne W.**, Research Assistant, State Department of Education, Albany, New York.
- Spaulding, Francis T.**, Professor of Education, Harvard University, Cambridge, Massachusetts.
- Spencer, Peter L.**, Professor of Education, Claremont Colleges, Claremont, California.
- Starbuck, Edwin D.**, Professor of Philosophy, University of Southern California, Los Angeles, California.
- Stenquist, John L.**, Director, Bureau of Educational Research, Baltimore Public Schools, Baltimore, Maryland.
- Stern, Bessie C.**, Statistician, State Department of Education, Baltimore, Maryland.
- Stoddard, George D.**, Director, Iowa Child Welfare Research Station, State University of Iowa, Iowa City, Iowa.
- Stoke, Stuart M.**, Chairman, Department of Education, Mount Holyoke College, South Hadley, Massachusetts.
- Stokes, C. Newton**, Chairman, Department of Mathematics, Temple University, Philadelphia, Pennsylvania.
- Strachan, Lexie**, Psychologist, Public Schools, Kansas City, Missouri.
- Strang, Ruth M.**, Associate Professor of Education, Teachers College, Columbia University, New York, New York.
- Stratemeyer, Florence B.**, Associate Professor of Education, Teachers College, Columbia University, New York, New York.
- Strayer, George D.**, Professor of Education, Teachers College, Columbia University, New York, New York.
- Strayer, George D., Jr.**, Professor of Education, George Peabody College for Teachers, Nashville, Tennessee.
- Streitz, Ruth**, Professor of Education, Ohio State University, Columbus, Ohio.
- Sutton, D. H.**, Director, Division of School Finance, State Department of Education, Columbus, Ohio.
- Swann, Reginald L.**, Director of Student Personnel, Green Mountain Junior College, Poultney, Vermont.
- Swift, Fletcher Harper**, Professor of Education, University of California, Berkeley, California.
- Symonds, Percival M.**, Professor of Education, Teachers College, Columbia University, New York, New York.
- Taylor, John W.**, Associate Professor of Comparative Education, Louisiana State University, University, Louisiana.
- Terry, Paul W.**, Professor of Educational Psychology, University of Alabama, University, Alabama.
- Theisen, W. W.**, Assistant Superintendent of Schools, Milwaukee, Wisconsin.
- Tidwell, Robert E.**, Professor of Education and Director of Extension, University of Alabama, University, Alabama.
- Tiegs, Ernest W.**, Dean of University College, University of Southern California, Los Angeles, California.
- Tilton, J. Warren**, Associate Professor of Educational Psychology, Yale University, New Haven, Connecticut.
- Tink, Edmund L.**, Superintendent of Schools, Kearny, New Jersey.
- Toops, Herbert A.**, Professor of Psychology, Ohio State University, Columbus, Ohio.
- Torgerson, T. L.**, Associate Professor of Education, University of Wisconsin, Madison, Wisconsin.
- Tormey, T. J.**, President, Arizona State Teachers College, Flagstaff, Arizona.
- Townsend, M. Ernest**, President, New Jersey State Teachers College, Newark, New Jersey.
- Trabue, M. R.**, Dean, School of Education, Pennsylvania State College, State College, Pennsylvania.
- Traxler, Arthur E.**, Assistant Director, Educational Records Bureau, New York, New York.
- Trow, Wm. Clark**, Professor of Educational Psychology, University of Michigan, Ann Arbor, Michigan.
- Turney, Austin Henry**, Associate Professor of Education, University of Kansas, Lawrence, Kansas.

- Tyler, Henry T.**, Instructor in Psychology, Sacramento Junior College, Sacramento, California.
- Tyler, I. Keith**, Research Associate, Bureau of Educational Research, Ohio State University, Columbus, Ohio.
- Tyler, Ralph W.**, Chairman, Department of Education, University of Chicago, Chicago, Illinois.
- Tyler, Tracy F.**, Associate Professor of Education, College of Education, University of Minnesota, Minneapolis, Minnesota.
- Uhl, Willis L.**, Dean, School of Education, University of Washington, Seattle, Washington.
- Umstattd, J. G.**, School of Education, University of Texas, Austin, Texas.
- Updegraff, Harlan**, 625 E. California Street, Pasadena, California.
- Upshall, Charles Cecil**, Director, Bureau of Research, Western Washington College of Education, Bellingham, Washington.
- Van Wagenen, M. J.**, Assistant Professor of Educational Psychology, University of Minnesota, Minneapolis, Minnesota.
- Vreeland, Wendell**, Director, Division of University Research, Wayne University, Detroit, Michigan.
- Walker, Helen M.**, Associate Professor of Education, Teachers College, Columbia University, New York, New York.
- Waples, Douglas**, Professor of Educational Method, Graduate Library School, University of Chicago, Chicago, Illinois.
- Washburne, Carleton W.**, Superintendent of Schools, Winnetka, Illinois.
- Washburne, John M.**, Associate Professor of Educational Psychology, Syracuse University, Syracuse, New York.
- Waterman, Ivan R.**, Chief, Division of Textbooks and Publications, State Department of Education, Sacramento, California.
- Watkins, Ralph K.**, Professor of Education, University of Missouri, Columbia, Missouri.
- Watson, Goodwin**, Professor of Education, Teachers College, Columbia University, New York, New York.
- Webb, Paul E.**, Principal, San Fernando High School, Los Angeles, California.
- Weedon, Vivian**, Curriculum Consultant, Education Division, National Safety Council, Chicago, Illinois.
- Weidemann, Charles C.**, Associate Professor of Education, Ohio State University, Columbus, Ohio.
- Welles, J. B.**, Principal, State Normal School, Geneseo, New York.
- Wellman, Beth**, Professor of Child Psychology, State University of Iowa, Iowa City, Iowa.
- West, Paul V.**, Professor of Education, New York University, New York, New York.
- Wheat, H. G.**, Professor of Education, West Virginia University, Morgantown, West Virginia.
- Wiley, George M.**, Associate Commissioner of Education, State Department of Education, Albany, New York.
- Williams, J. Harold**, Professor of Education and Dean of Summer Session, University of California at Los Angeles, Los Angeles, California.
- Williamson, E. G.**, Coordinator of Student Personnel Services, University of Minnesota, Minneapolis, Minnesota.
- Willig, M. H.**, Professor of Education, University of Wisconsin, Madison, Wisconsin.
- Wilson, Guy M.**, Professor of Education, Boston University, Boston, Massachusetts.
- Witty, Paul**, Professor of Education, Northwestern University, Evanston, Illinois.
- Wood, Ben D.**, Professor of Collegiate Research, Columbia University, New York, New York.
- Wood, Ernest R.**, Associate Professor of Psychology, New York University, New York, New York.
- Wood, Ray G.**, Director, Ohio Scholarship Tests and Instructional Research, State Department of Education, Columbus, Ohio.
- Woods, Elizabeth L.**, Supervisor, Educational Research and Guidance, Los Angeles City Schools, Los Angeles, California.

- Woods, Roy C.**, Professor of Education, Marshall College, Huntington, West Virginia.
Woody, Clifford, Director, Bureau of Educational Reference and Research, University of Michigan, Ann Arbor, Michigan.
Worcester, D. A., Head, Department of Educational Psychology and Measurements, University of Nebraska, Lincoln, Nebraska.
Wray, Robert P., Assistant Director, Research and Statistics, Department of Public Assistance, Harrisburg, Pennsylvania.
Wrenn, C. Gilbert, Professor of Educational Psychology, University of Minnesota, Minneapolis, Minnesota.
Wright, Wendell W., Professor of Education, Indiana University, Bloomington, Indiana.
Wrightstone, J. Wayne, Assistant Professor of Education, Bureau of Educational Research, Ohio State University, Columbus, Ohio.
Yates, Dorothy H., Associate Professor of Psychology, San Jose State College, San Jose, California.
Yeager, William A., Professor of Administration, University of Pittsburgh, Pittsburgh, Pennsylvania.
Young, William E., Director of Elementary Education, State Department of Education, Albany, New York.
Zirbes, Laura, Professor of Education, Ohio State University, Columbus, Ohio.

Members of the Pennsylvania Educational Research Association Affiliated with the American Educational Research Association

- ***Arnold, William E.**, Assistant Professor of Education, University of Pennsylvania, Philadelphia, Pennsylvania.
Beard, Ralph B., Instructor in Education, State Teachers College, Indiana, Pennsylvania.
Bernreuter, Robert G., Associate Professor of Psychology, Pennsylvania State College, State College, Pennsylvania.
***Betts, Emmett Albert**, Research Professor and Director of Reading Clinic, Pennsylvania State College, State College, Pennsylvania.
Bontrager, O. R., Assistant Director of Student Teaching, State Teachers College, California, Pennsylvania.
Boyer, Lee E., Instructor in Mathematics, State Teachers College, Millersville, Pennsylvania.
***Boyer, Philip A.**, Director, Division of Educational Research, Board of Education, Philadelphia, Pennsylvania.
***Buckner, C. A.**, Professor of Education, University of Pittsburgh, Pittsburgh, Pennsylvania.
Campbell, D. W., Research Adviser, Department of Public Instruction, Harrisburg, Pennsylvania.
***Connor, William L.**, Superintendent of Schools, Allentown, Pennsylvania.
Cressman, Paul L., Director, Bureau of Instruction, Department of Public Instruction, Harrisburg, Pennsylvania.
Davis, Donald P., Director, Bureau of Administration and Finance, Department of Public Instruction, Harrisburg, Pennsylvania.
Davis, F. G., Head, Department of Education, Bucknell University, Lewisburg, Pennsylvania.
Eichler, G. A., Superintendent of Schools, Northampton, Pennsylvania.
Faust, J. Frank, Principal, Chambersburg High School, Chambersburg, Pennsylvania.
Ford, Thomas H., Superintendent of Schools, Reading, Pennsylvania.
Gayman, H. E., Assistant Executive Secretary and Director of Research, Pennsylvania State Education Association, Harrisburg, Pennsylvania.
Glatfelter, E. A., Principal, Hannah Penn Junior High School, York, Pennsylvania.
Hovis, Raymond S., Rural Supervisor, State Teachers College, Millersville, Pennsylvania.
Hughes, R. O., Assistant Director, Curriculum Study and Research, Pittsburgh Public Schools, Pittsburgh, Pennsylvania.

* Also active member of the American Educational Research Association.

- Jaarsma, Cornelius**, Dean of Instruction, State Teachers College, Slippy Rock, Pennsylvania.
- ***Jones, Arthur J.**, Professor of Secondary Education, University of Pennsylvania, Philadelphia, Pennsylvania.
- Kniss, F. R.**, Supervising Principal, Bigler Township Public Schools, Madera, Pennsylvania.
- Kriner, Harry L.**, Assistant Director of Teacher Education and Certification, Department of Public Instruction, Harrisburg, Pennsylvania.
- Lafferty, T. T.**, Associate Professor of Education, Lehigh University, Bethlehem, Pennsylvania.
- Madden, Richard**, Instructor in Education, State Teachers College, Indiana, Pennsylvania.
- Marshall, M. V.**, Associate Professor of Education, Franklin and Marshall College, Lancaster, Pennsylvania.
- Miller, M. Lincoln**, Supervising Teacher, Laboratory School, State Teachers College, Indiana, Pennsylvania.
- ***Mornebeck, Carl D.**, Chief, Division of Child Accounting and Research, Department of Public Instruction, Harrisburg, Pennsylvania.
- ***Munson, Saron E.**, Director of Research, School District of Lancaster, Lancaster, Pennsylvania.
- Neagley, Samuel M.**, Instructor in Educational Measurements, State Teachers College, California, Pennsylvania.
- Nietz, John A.**, Associate Professor of Psychology, University of Pittsburgh, Pittsburgh, Pennsylvania.
- ***Peters, Charles C.**, Director of Educational Research, Pennsylvania State College, State College, Pennsylvania.
- ***Prall, Charles E.**, Dean, School of Education, University of Pittsburgh, Pittsburgh, Pennsylvania.
- Schlegel, Albert G. W.**, Supervising Principal, Red Lion Public Schools, Red Lion, Pennsylvania.
- Seibert, Earl W.**, Psychologist, Hershey High School, Hershey, Pennsylvania.
- Shank, C. Earl**, Principal, Franklin Junior High School, Aliquippa, Pennsylvania.
- Shelly, Colsin R.**, Principal, Fremont Street School, Lancaster, Pennsylvania.
- Steele, Robert M.**, President, State Teachers College, California, Pennsylvania.
- Steiner, M. A.**, Supervising Principal, Ingram Public Schools, Ingram, Pennsylvania.
- Stine, Mark E.**, Instructor in Education, State Teachers College, Millersville, Pennsylvania.
- ***Stokes, C. Newton**, Chairman, Department of Mathematics, Temple University, Philadelphia, Pennsylvania.
- Thomas, Harold P.**, Head, Department of Education, Lehigh University, Bethlehem, Pennsylvania.
- ***Trabue, M. R.**, Dean, School of Education, Pennsylvania State College, State College, Pennsylvania.
- Walk, George E.**, Dean, Teachers College, Temple University, Philadelphia, Pennsylvania.
- Weisenfluh, Norman**, Instructor in Education, State Teachers College, Slippy Rock, Pennsylvania.
- ***Wray, Robert P.**, Assistant Director, Research and Statistics, Department of Public Assistance, Harrisburg, Pennsylvania.
- Wrigley, O. C.**, Instructor in Education, State Teachers College, Slippy Rock, Pennsylvania.

* Also active member of the American Educational Research Association.

Index to Vol. VIII, No. 5, December 1938

References in this Index are to the beginning of chapters and their subdivisions, and to the first allusion in running (perhaps intermittent) discussions. One should scan several pages following the one cited.

- Acceleration, 512
Achievement, and intelligence, 499;
studies of, 498; *see also* particular sub-
ject field, prediction of school success,
tests and scales
Adapting instruction to pupils, 525, 542
Algebra, achievement in, 504
Anecdotal records, 515
Arithmetic, achievement in, 504
Attitudes, measurement of, 545

Bilingual pupils, *see* nationality

Checklist, 514
Class size, 511
College, *see* higher education
College teaching, *see* particular subject
field
Composition, *see* English
Cooperative testing, *see* regional testing
Criticisms, of measurement, 545; of re-
search, 497

Diagnosis, 513; in arithmetic, 505
Drawing, 500

English, achievement in, 506; *see also*
literature
Essay tests, *see* tests and scales
Evaluation Staff (of the Progressive Edu-
cation Association), 514, 534, 544
Experimentation, measurement in, 497

Factor analysis, criticisms of, 545
Foreign language, achievement in, 507;
in homes, 499; *see also* nationality

Genetic studies, 549
Geometry, achievement in, 504
Growth curve, 506
Guidance, 542

Handedness, *see* laterality
Handwriting, 508
Higher education, measurement, 497, 536;
see also prediction of school success
History, *see* social studies
Hollerith tabulating machines, 540

Individual differences, *see* adapting in-
struction to pupils, variability between
individuals

Individualized instruction, *see* adapting
instruction to pupils
Intelligence, and achievement, 499
Interpretation, of test scores, 540
Interview, for diagnosis, 505

Laterality, 504
Left-handedness, *see* laterality
Literature, measurement of, 528

Marks, 499
Mathematics, *see* algebra, arithmetic,
geometry
Measurement, criticisms of, 545; history,
547; in higher education, 497; in re-
search, 497; influence on education,
529; of intangible outcomes, 544; phil-
osophy, 531; purposes, 528; trends,
546; *see also* factor analysis, objec-
tivity, regional testing, tests and scales,
validity
Motion pictures, 509
Music, achievement in, 499, 510; and in-
telligence, 499; and nationality, 510;
predicting, 510

Nationality, and language, 499; and
music, 510; and reading, 503
Norms, 542; use of, 525

Objective tests, *see* tests and scales
Objectives, broadened, 533
Observation, 549; by teachers, 515; of
pupils, 534

Phonics, 501
Poetry, 507, 511
Prediction of school success, 500, 506
Prevention, of achievement deficiencies,
513
Profiles, 543

Reading, achievement, 501; diagnosis,
503, 514; effect of typography, 503;
in college, 503; and intelligence, 502;
and nationality, 503; readiness, 501;
remediation, 502, 514; and visual effi-
ciency, 504; *see also* phonics
Records, of pupils, 534; *see also* anecdotal
records

- Regional testing, 543
Reliability, of essay tests, 521
Remediation, 513
Research, *see* experimentation, measurement
Scoring, 537; machine, 538; of essay tests, 521
Sex differences in reading, 503
Social studies, achievement in, 509; prediction, 510
Sound recording, 498, 507; of tests, 498
Spelling, measurement of, 507
Summer workshops, 536
Tests and scales, by sound, 498; essay tests, 517; objective tests, 498, 518; studies of, 497; *see also* measurement, norms, profiles, reliability, scoring, validity, and particular subject field
Transient youth, 499
Validity, need for, 497
Variability, between individuals, 525
Visual aids, 510
Visual efficiency and reading, 504
Vocabulary, 502, 503
Youth, *see* transient youth

Index to Volume VIII

- Ability grouping, 251
- Academic success, 17, 51, 247, 275, 500, 506; *see also* particular subject field
- Acceleration, 251, 512
- Accidents, 266, 375; *see also* safety, emotions
- Accomplishment quotient, 244, 250, 308
- Accounting, bibliography, 200; financial, 142; for supplies, 390; higher education, 146; internal, 144; property, 144; *see also* budgeting, business administration, finance
- Achievement, and intelligence, 499; factors related to, 19; studies of, 498, 554; *see also* academic success, tests and scales, particular subject field
- Adapting instruction to pupils, 35, 60, 70, 525, 542
- Adjustment, surveys, 293
- Administrative units, 432
- Algebra, achievement in, 504; *see also* mathematics
- Anecdotal records, 515
- Apparatus, 380
- Appraisal, of buses, 428; of heating service, 373; of lighting, 401; of reports, 159; of school buildings, 420, 425
- Aptitudes, *see* academic success, vocational aptitude, particular subject field
- Arithmetic, achievement in, 504; development of concepts, 236
- Art, aptitude, 263; bibliography, 75; measurement, 8; needed research, 10; psychology of, 7; teaching of, 7; value of, 7; vocabulary, 9
- Athletic ability, *see* motor abilities
- Athletics, *see* health and physical education
- Attendance units, 126
- Attitudes, in American history, 72; measurement of, 46, 63, 269, 276, 312, 545; scientific, 63; social, 67; surveys of, 298; *see also* racial prejudices, religious attitudes
- Auditorium, 382
- Automobile driving, 263; *see also* safety
- Aviation, aptitude, 265
- Bibliographies, accounting: financial and property, 200; applications of intelligence testing, 327; applications of tests of non-intellectual functions, 353; art, 75; budgetary procedure, 199; character education, 75; commercial subjects, 77; cost of school buildings, 480; court decisions in the school plant field, 438; developments in statistical methods related to test construction, 357; developments in test scoring and analysis, 564; education and psychology, 80; educational costs and their analysis, 201; educational measurement movement in perspective, 565; educational prevention, diagnosis, and remediation, 558; English language, reading and literature, 81; equipment, apparatus, and supplies, 471; essay-type test, 559; financial implications of school organization, 196; financial planning, 194; financial reporting, 202; foreign languages, 87; foreign school buildings, 481; health and physical education, 88; heating, ventilation, and sanitation in school buildings, 476; home economics, 90; improvement of classroom testing, 560; industrial arts, 92; insurance, purchasing, and stores management, 205; intelligence tests, 318; mathematics, 95; music, 96; operation and maintenance of the school plant, 466; personality and character measurement, 340; plant development for higher education, including junior colleges, 483; pupil transportation equipment, 485; recent literature on testing, 568; salary scheduling, 204; school illumination, 477; science, 97; social studies, 98; state studies of local school units as related to the school plant, 436; status of research in the school plant field, 490; studies of educational achievement, 554; support of education: federal, state, and local funding, 206; support of education—major problems, 190; technics of school building surveys, 483; tests and studies of infants and young children, 320; trends in school architecture and design, 487; vocational aptitude tests, 334
- Bilingual pupils, *see* nationality
- Birth rates, 243
- Blackboards, 379, 412; lighting, 380
- Bonds, court decisions, 453
- Bookkeeping, teaching of, 17
- Budgeting, 120, 133; bibliography, 199; evaluation, 134; *see also* accounting, business administration, finance, planning
- Buildings, *see* school buildings
- Business administration, 146, 379; evaluation of research, 187; needed research,

- 187; *see also* accounting, budgeting, finance, purchasing, transportation of pupils
- Business management, 391; *see also* accounting, equipment, inventory, maintenance, operation, purchasing, school buildings, supplies
- Cafeteria, *see* lunchrooms
- Causation, 310; *see also* correlation
- Capital outlay, 122; and size of administrative unit, 432; court decisions, 453; federal support for, 179; for higher education units, 458; state support for, 183; *see also* debt service, finance
- Character, bibliography, 75; education, 11, 40; measurement of, 269, 302, 340; *see also* moral behavior, social adjustment and behavior
- Cheating, 11, 13, 285
- Checklist, for behavior, 514; for buildings, 422; for fiction, 30; of building costs, 411; for economy, 374; for maintenance, 378; for safety, 375
- Child psychology, *see* preschool children
- Civic training and attitudes, *see* social studies
- Class size, 511
- Cleaning, *see* blackboards, floors, laundry, operation of school plant
- Clerical aptitudes, 257
- Clothing, *see* home economics
- College, *see* higher education
- College teaching, 19, 25; *see also* particular subject field
- Commercial subjects, bibliography, 77; equipment, 386; prognosis, 17; teaching of, 15
- Community use of school plant, court decisions, 457
- Composition, *see* English
- Conservation, 69
- Consolidation, 127, 432; *see also* school districts
- Consumer education, 44, 69
- Contemporary problems, 14
- Cooperative testing, *see* regional testing
- Correlation, of abilities, 225, 235, 244; statistics, 308; *see also* causation
- Cost, bibliography, 201; of buildings, 408; of education, 148; *see also* finance, unit costs
- County units, 128, 131, 432
- Court decisions, on finance, 451; on insurance, 455; on purchasing, 451; on school buildings, 451, 488
- Criticisms, of measurement, 545; of research, 497
- Current events, 72
- Curriculum, *see* particular subject field
- Debt service, 113; *see also* capital outlay, finance
- Delinquency, 254, 303; *see also* moral behavior
- Development, *see* genetic studies
- Diagnosis, 513; in arithmetic, 505
- Difficulty, *see* reading, vocabulary
- Documentary frequency studies, 69
- Drawing, 501
- Economies, 167, 373, 395; through reorganizing districts, 127; *see also* consolidation, finance
- Educational Policies Commission, 128
- Educational tests and their uses, 493-596
- Emotions, and accidents, 266; and driving, 263; development of, 237; variability, 293
- Engineers, 369, 379
- English, achievement in, 506; bibliography, 81; composition, 25; errors, 26, 28; freshman course, 25; grammar, 18, 26; high-school curriculum, 25; measurement, 27; objectives, 26; prognosis, 25; teaching, 25; usage, 27; *see also* literature
- Environment, and intelligence, 235, 241; and personality, 238; and academic success, 248
- Equalization, *see* local support, federal support, state support
- Equipment, 380; bibliography, 471; *see also* lighting, seating
- Errors, *see* particular subject field
- Essay tests, *see* tests and scales
- Eugenics, 243
- Evaluation, of budgets, 134; of fiction, 30; of periodicals, 31; of research, 34, 187; *see also* measurement
- Evaluation Staff (of the Progressive Education Association), 514, 534, 544
- Excursions, school, 70
- Experimentation, measurement in, 497
- Experiments, 310; on infants, 229
- Extermination of pests, 375
- Factor analysis, 231, 239, 257, 286, 297, 307, 312; criticisms of, 545
- Family relations, 44, 293

- Federal support of education, 108, 124, 171; for parochial and private schools, 180; *see also* finance
- Finance, evaluation of research in, 187; needed research, 140, 187; protection of funds, 158, 186; reports, 154, 202; *see also* accounting, bonds, budgeting, business administration, capital outlay, costs of education, debt service, economies, insurance, junior colleges, legislation, salaries, support of education, taxation, transportation of pupils, tuition fees, unit costs
- Finance and business administration, 103-212
- Fire, *see* insurance, safety
- Floors, cleaning, 371; maintenance, 372; material, 380
- Foods, *see* home economics
- Foreign education, buildings, 413, 481
- Foreign language, achievement in, 507; bibliography, 37, 87; in homes, 499; prognosis, 36; research in progress, 37; teaching of, 34; *see also* nationality
- Genetic studies, 549; *see also* emotions, development of; growth; language, development of; mental development; personality, development of; physical development; play; preschool children; social adjustment and behavior
- Geography, *see* maps, social studies
- Geometry, achievement in, 504; *see also* mathematics
- Grammar, *see* English
- Graphology, 289
- Graphs, *see* nomographs, profiles
- Grounds, *see* playgrounds, sites
- Growth, curves, 235, 506; *see also* genetic studies for cross references
- Guidance, 542
- Handedness, 234, 265; *see also* laterality
- Handwriting, 508; *see also* graphology
- Health, of teachers, 378
- Health and physical education, 39; bibliography, 88; equipment, 386, 424; measurement, 40; needed research, 41; objectives, 40
- Heating, 373, 392; bibliography, 476; equipment costs, 408; *see also* ventilation
- Higher education, buildings, 423, 483; capital outlay, 458; court decisions, 458; measurement, 497, 536; taxation, 458; *see also* accounting, academic success
- History, *see* social studies
- Hollerith tabulating machines, 540
- Home, *see* environment
- Home economics, bibliography, 90; measurement, 45; teaching, 42
- Homogeneous grouping, *see* ability grouping
- Household arts, equipment, 385
- Illumination, *see* lighting
- Incidental teaching, in social studies, 72
- Index numbers, 410
- Indians, *see* nationality
- Individual differences, *see* adapting instruction to pupils; variability between individuals
- Individualized instruction, *see* adapting instruction to pupils
- Industrial arts, bibliography, 92; curriculum, 48; equipment, 385; general shop, 48; history of, 47, 50; objectives, 47; psychology, 47; teaching, 47; visual aids, 49
- Infants, *see* preschool children
- Insurance, 167; bibliography, 205; court decisions, 455; fire, 375; *see also* finance
- Integrated program, 27
- Intelligence, and achievement, 499; and clerical ability, 257; and delinquency, 254; and driving, 264; and health, 244; and mechanical ability, 259; and moral behavior, 245; and music, 245; and occupations, 242, 251; and personality, 245; and physical defects, 253; and school success, 247; and sex differences, 244; surveys of, 246; testing programs, 246; *see also* accomplishment quotient, environment, racial differences
- Intelligence tests, applications of, 241; bibliography, 318, 327; for infants and preschool children, 229; group, 223; incentives, 225; individual, 221; non-verbal, 227
- Internal accounting, *see* accounting
- Interpretation, of test scores, 540
- Interests, 275; of pupils, 43, 45, 64; surveys, 298
- International relations, 69
- Interviews, 279; as tests, 222, 265; for diagnosis, 505; in research, 45; in teaching, 61, 71
- Inventories, 391; *see also* accounting, property

- Item analysis, 307, 311
- Janitors and custodians, 369
- Judgments, 281; *see also* rating
- Junior colleges, support, 129; *see also* finance, higher education
- Kindergarten, equipment, 381
- Kitchen, *see* lunchrooms
- Laboratories, *see* physical science
- Landscaping, *see* sites
- Language, development of, 236, 254
- Laterality, 504
- Laundry, 376
- Left-handedness, *see* laterality
- Legislation, budgets, 133; school buildings, 123; taxes, 110; *see also* court decisions, finance
- Libraries, equipment, 381; junior colleges, 423; schools, 31; *see also* reading
- Lighting, 374, 376, 380, 382, 399, 415, 425; bibliography, 477; equipment costs, 408; needed research, 401, 407; *see also* painting of buildings, windows
- Literature, measurement, 528; teaching of, 29
- Local School Units Project, 437
- Local support of education, 184
- Lunchrooms, 144; court decisions, 458; equipment, 382
- Maintenance, of grounds, 378; of school plant, 369; of walls, 377; *see also* floors, operation of school plant, painting of buildings
- Manual training, *see* industrial arts
- Maps, 387; reading of, 72
- Marital relations, 292
- Marks, 499
- Mathematics, achievement in, 54; bibliography, 95; curriculum, 56; drill, 57; prognosis, 51; psychology of, 51; and reading, 55; remedial instruction, 57; sex differences, 55; teaching of, 51; vocabulary, 55; *see also* algebra, arithmetic, geometry
- Measurement, bibliography, 566; criticisms of, 545; frequency of, 21; history, 547; in higher education, 497; in research, 497; incentives, 225; influence on education, 529; needed research, 316; of appreciation, 29; of attitudes, 45, 63; of financial ability, effort and need, 174, 182; of intangible outcomes, 544; of visual defects, 33; philosophy of, 531; purposes, 528; trends, 546; unit of, 308; *see also* evaluation, factor analysis, objectivity, rating, regional testing, reliability, scaling, tests and scales, validity, particular subject field
- Mechanical aptitudes, 258
- Memory, 226, 236
- Mental development, *see* intelligence, genetic studies for cross references
- Mental tests, *see* psychological tests
- Methods of teaching, *see* particular subject field
- Mobility of population, 173
- Moral behavior, 11, 245, 302; *see also* cheating
- Motion pictures, 509; in schools, 384; *see also* observation, photographic recording, visual aids
- Motivation, 11
- Motor abilities, 226, 233, 244, 259; *see also* physical development
- Music, achievement in, 499, 510; and intelligence, 245, 499; aptitude, 262; bibliography, 58, 96; equipment, 386; history, 58; in American history, 70; measurement of, 231; nationality, 510; predicting, 510; prognosis, 58; psychology of, 237; surveys, 58; teaching of, 58
- Nationality, and art, 8; and language, 499; and music, 510; and reading, 503; *see also* racial differences
- Nature and nurture, *see* environment
- Needed research, 187; art, 10; finance, 140; health and physical education, 41; intelligence testing, 256; lighting, 401; measurement, 316; on school costs, 153; on school plant, 460; on transportation, 431; personality study, 217; psychological tests, 217; reporting intelligence scores, 250
- Negroes, support of education, 174, 180; *see also* racial differences
- Nomographs, 307
- Norms, 542; use of, 525
- Nursery school, equipment, 381
- Objective tests, *see* tests and scales
- Objectives, broadened, 533
- Observation, 231, 237, 239, 549; by motion pictures, 15; by teachers, 515; of behavior, 289; of pupils, 534; variation in, 62; *see also* photographic recording

- Occupations, and fecundity, 243; and intelligence, 242, 251; *see also* environment, vocational aptitude
- Office, equipment, 381; planning, 381
- One-teacher schools, 128, 151; *see also* size of schools
- Operation of school plant, 369; bibliography, 466; *see also* engineers, floors, heating, janitor, laundry, lighting, swimming pools, ventilation
- Organization, *see* school organization
- Painting of buildings, 376, 405; *see also* lighting
- Parent-child relationships, 277
- Parochial schools, support, 180
- Personality, and delinquency, 255; and intelligence, 245; development of, 42, 237; measurement of, 269, 340; needed research, 217; rating, 281; studies of, 229; surveys, 292; *see also* adjustment, psychological tests and cross references, rating
- Phonics, 501
- Photographic recording, 233, 237, 240
- Physical defects, 244
- Physical development, 244, 315; *see also* motor abilities, genetic studies for cross references
- Physical science, equipment, 385, 423
- Pictures, 237; *see* photographic recording
- Planning, 120, 145; bibliography, 194; *see also* budgeting
- Play, 231, 239
- Playgrounds, 386; court decisions, 451; *see also* sites
- Plumbing, 397; costs, 408; *see also* sanitation, toilets
- Poetry, 507, 511
- Population, mobility of, 173; prediction, 421
- Prediction of academic success, *see* academic success
- Preschool children, 229; tests, 320
- Prevention, of achievement deficiencies, 513
- Professional aptitudes, 261
- Profiles, 543; occupational, 266
- Protection of funds, *see* finance
- Psychological tests and scales, 308; *see also* aptitudes, attitudes, character, intelligence, interests, moral behavior, needed research, personality, social adjustment and behavior, surveys, vocational aptitude
- Psychological tests and their uses, 213-364
- Psychology, educational, bibliography, 80; measurement, 21; prognosis, 20; teaching of, 20; for psychology of school subjects, *see* particular subject field*
- Psychology and methods in the high school and college, 1-132
- Public relations, 123, 131, 154; *see also* reports
- Purchasing, 168, 387; *see also* business administration
- Racial differences, 230, 234, 237, 243, 295
- Racial prejudices, 279, 300
- Radio, education, 36, 44; equipment, 383
- Rating, of personality, 281, 307; scales, 231
- Reading, achievement, 501; and intelligence, 502; and nationality, 503; and visual efficiency, 504; diagnosis, 503, 514; difficulty of material, 32; effect of typography, 503; errors, 236; evaluation of tastes, 30; extensive, 29; in college, 503; interests, 30, 276; of periodicals and newspapers, 31; rate, 33; readiness, 247, 501; remedial, 32, 502, 514; speed of, 20; *see also* phonics
- Reasoning, 236
- Recording equipment for speech study, 29
- Records, 291; pupil, 246, 534; test, 249; *see also* anecdotal records, photographic recording
- Regional testing, 543
- Reliability, 309; of essay tests, 521
- Religious attitudes, 279
- Remedial instruction, 513; in mathematics, 57; in reading, 32
- Repairs, *see* maintenance
- Reports, 154; *see also* finance, public relations
- Research, evaluation of, 34; in government, 462; in industry, 461; on school buildings, 460, 490; *see also* experimentation, measurement, needed research
- Rural education, 182
- Safety, 49, 263, 375; *see also* accidents, automobile driving
- Salaries, custodians, 370; government, 164; schedules, 163, 204; teachers, 163; *see also* finance
- Sampling, 239, 310; *see also* statistical methods

- Sanitation, 397; bibliography, 476; *see also* plumbing, toilets
- Scales, *see* scaling, tests and scales, particular subject field
- Scaling, 307; *see also* measurement, unit of; scoring
- Scholastic aptitude, *see* academic success
- School buildings, adaptation to educational programs, 445; architecture, 443; bibliography, 466, 476, 480, 481, 483, 486, 487, 488, 490; costs, 421; court decisions, 451; effect of size of units, 432; materials, 447; needed research, 460; programs, 419; surveys, 418, 432; trends, 443; *see also* capital outlay, equipment, extermination of pests, floors, heating, insurance, lighting, maintenance, operation, sites, ventilation
- School districts, 127, 432; reorganization, 122, 126, 151, 181, 432; *see also* consolidation; administrative units
- School finance, evaluation of research, 187; needed research, 187
- School law, 451; *see also* court decisions
- School organization, 126; bibliography, 196; *see also* administrative units
- School plant and equipment, 365-492
- School surveys, 146; *see also* school buildings, surveys
- Science, bibliography, 97; errors, 60; objectives of, 63, 65; teaching of, 60; *see also* physical science
- Scientific attitudes, 63
- Score-card, 379
- Scoring, 307, 311, 537; bibliography, 564; machine, 538; of essay tests, 521
- Seating, 380
- Sex differences, in art, 8; in intelligence, 244; in mathematics, 55; in music, 262; in reading, 503
- Shop, *see* industrial arts
- Shorthand, teaching of, 17
- Sight saving classes, *see* lighting, special schools and classes
- Sites, court decisions, 452; landscaping, 425; maintenance, 378, 425; surfacing, 378; *see also* playgrounds
- Size of schools, 127, 151; *see also* one-teacher schools
- Social adjustment and behavior, 43, 238; measurement of, 231
- Social attitudes, 67
- Social studies, achievement in, 67, 509; bibliography, 98; contemporary problems, 67; curriculum, 69; measurement, 68; prediction, 510; teachers, 72; teaching of, 70; vocabulary, 71; *see also* current events, consumer education
- Sound recording, 498, 507; of tests, 498
- Special schools and classes, 401, 416
- Speech, defects, 255; recording equipment, 29
- Spelling, 36; measurement of, 507
- State school systems, 128; *see also* state units
- State studies of administrative units, 432
- State support of education, 108, 127, 130, 180; *see also* finance, state units, support of education
- State units, 131; *see also* state school systems
- Statistical methods, 307; tests of significance, 310; *see also* correlation, factor analysis, nomographs, sampling, tabulating machines, tests and scales, weighting
- Stenographic reports, 71
- Study, methods, 20, 22, 32, 60, 71
- Summer workshops, 536
- Superstitions, 63
- Supplies, 387; purchase and storage, 168
- Support of education, 171; bibliography, 190, 206; *see also* federal support of education, local support of education, state support of education, taxation
- Surveys, intelligence, 246; school buildings, 418, 432, 483
- Swimming pools, 379
- Tabulating machines, 307, 309
- Taxation, 107, 185; of higher education institutions, 458; of school property, 455; *see also* finance, support of education
- Teacher training, industrial arts, 49; social studies, 72
- Teachers' salaries, *see* salaries
- Teachers, traits, 304
- Teaching, methods of, *see* particular subject field, teaching
- Testing, frequency of, 71
- Tests, *see* tests and scales
- Tests and scales, by sound, 498; construction of, 311, 357; effect of kind on study, 22; essay tests, 22, 28, 517, 559; length of, 21; objective tests, 498, 518; studies of, 497; *see also* item analysis, measurement, norms, profiles, psychological tests, reliability, scoring, validity, particular subject field

- Textbooks, 169; analysis, 49, 69, 71
Toilets, 397
Transfer of training, 8, 20, 64
Transient youth, 499
Transportation of pupils, 126, 150, 426;
bibliography, 485; costs, 427, 431;
needed research, 431; *see also* business
administration, finance, unit costs
Tuition fees, 129
Typewriting, psychology of, 15; teaching
of, 15
Unit, *see* measurement
Unit costs, 148, 158; buildings, 409, 421;
see also costs of education, finance,
transportation of pupils
Units, bibliography, 486; *see also* admin-
istrative units, attendance units, con-
solidation, county units, school districts,
school organization, size of schools, state
units, unit costs
Validity, 311; need for, 497
Variability, between abilities, 241; be-
tween individuals, 241, 258, 525; be-
tween pupils, 8; in occupational groups,
267; in performance, 264; in personal-
ity measurements, 271; *see also* ability
grouping, adapting instruction to pupils,
reliability, sex differences
Ventilation, 382, 392, 414; bibliography,
476; *see also* heating
Visual aids, 384, 425, 510; in industrial
arts, 49; in typing, 15; *see also* maps
Visual defects, 33; and lighting, 399
Visual efficiency and reading, 504
Vital statistics, *see* birth rates, eugenics
Vocabulary, 27, 502; algebra, 55; art, 9;
burden, 32; and intelligence, 248, 253;
of preschool children, 231; social studies
texts, 71; test, 231
Vocational aptitude, 257, 304; tests, 304;
see also academic success, professional
aptitudes
Vocational education, support of, 179;
see also commercial subjects; industrial
arts
Vocational guidance, 304
Weighting, 309, 312
Windows, 380, 403; *see also* lighting
Youth, *see* transient youth

REVIEW OF EDUCATIONAL RESEARCH

Issues Published To Date

THE CURRICULUM	
Vol. I, No. 1, January, 1931. 64 pp.....	1.00
TEACHER PERSONNEL	
Vol. I, No. 2, April, 1931. 96 pp.....	1.00
SCHOOL ORGANIZATION	
Vol. I, No. 3, June, 1931. 84 pp.....	1.00
SPECIAL METHODS IN THE ELEMENTARY SCHOOL	
Vol. I, No. 4, October, 1931. 82 pp.....	1.00
PSYCHOLOGY OF THE SCHOOL SUBJECTS	
Vol. I, No. 5, December, 1931. 127 pp.....	1.00
SPECIAL METHODS ON HIGH-SCHOOL LEVEL	
Vol. II, No. 1, February, 1932. 96 pp.....	1.00
FINANCE AND BUSINESS ADMINISTRATION	
Vol. II, No. 2, April, 1932. 89 pp.....	1.00
TESTS OF PERSONALITY AND CHARACTER	
Vol. II, No. 3, June, 1932. 88 pp.....	1.00
TESTS OF INTELLIGENCE AND APTITUDE	
Vol. II, No. 4, October, 1932. 72 pp.....	1.00
SCHOOL BUILDINGS, GROUNDS, EQUIPMENT, APPARATUS, AND SUPPLIES	
Vol. II, No. 5, December, 1932. 89 pp.....	1.00
EDUCATIONAL TESTS AND THEIR USES	
Vol. III, No. 1, February, 1933. 80 pp.....	1.00
MENTAL AND PHYSICAL DEVELOPMENT	
Vol. III, No. 2, April, 1933. 100 pp.....	1.00
PUPIL PERSONNEL, GUIDANCE, AND COUNSELING	
Vol. III, No. 3, June, 1933. 95 pp.....	1.00
PSYCHOLOGY OF LEARNING, GENERAL METHODS OF TEACHING, AND SUPERVISION	
Vol. III, No. 4, October, 1933. 88 pp.....	1.00
LEGAL BASIS OF EDUCATION	
Vol. III, No. 5, December, 1933. 114 pp.....	1.00
METHODS AND TECHNIQUES OF EDUCATIONAL RESEARCH	
Vol. IV, No. 1, February, 1934. 96 pp.....	1.00
THE CURRICULUM	
Vol. IV, No. 2, April, 1934. 132 pp.....	1.00
TEACHER PERSONNEL	
Vol. IV, No. 3, June, 1934. 100 pp.....	1.00
SCHOOL ORGANIZATION	
Vol. IV, No. 4, October, 1934. 92 pp.....	1.00
PSYCHOLOGY AND METHODS IN THE HIGH SCHOOL AND COLLEGE	
Vol. IV, No. 5, December, 1934. 119 pp.....	1.00
SPECIAL METHODS AND PSYCHOLOGY IN THE ELEMENTARY SCHOOL	
Vol. V, No. 1, February, 1935. 120 pp.....	1.00
FINANCE AND BUSINESS ADMINISTRATION	
Vol. V, No. 2, April, 1935. 64 pp.....	1.00
PSYCHOLOGICAL TESTS	
Vol. V, No. 3, June, 1935. 150 pp.....	1.00
THE SCHOOL PLANT	
Vol. V, No. 4, October, 1935. 111 pp.....	1.00
EDUCATIONAL TESTS AND THEIR USES	
Vol. V, No. 5, December, 1935. 99 pp.....	1.00
MENTAL AND PHYSICAL DEVELOPMENT	
Vol. VI, No. 1, February, 1936. 152 pp.....	1.00
PUPIL PERSONNEL, GUIDANCE, AND COUNSELING	
Vol. VI, No. 2, April, 1936. 122 pp.....	Out of print
PSYCHOLOGY OF LEARNING, GENERAL METHODS OF TEACHING, AND SUPERVISION	
Vol. VI, No. 3, June, 1936. 72 pp.....	Out of print
HISTORY OF EDUCATION AND COMPARATIVE EDUCATION	
Vol. VI, No. 4, October, 1936. 104 pp.....	1.00

REVIEW OF EDUCATIONAL RESEARCH

Issues Published to Date (Continued)

MENTAL HYGIENE AND ADJUSTMENT	
Vol. VI, No. 5, December, 1936. 120 pp.....	1.00
EDUCATIONAL SOCIOLOGY	
Vol. VII, No. 1, February, 1937. 112 pp.....	1.00
THE CURRICULUM	
Vol. VII, No. 2, April, 1937. 124 pp.....	1.00
TEACHER PERSONNEL	
Vol. VII, No. 3, June, 1937. 118 pp.....	1.00
SCHOOL ORGANIZATION	
Vol. VII, No. 4, October, 1937. 90 pp.....	1.00
SPECIAL METHODS AND PSYCHOLOGY OF THE ELEMENTARY-SCHOOL SUBJECTS	
Vol. VII, No. 5, December, 1937. 159 pp.....	1.00
PSYCHOLOGY AND METHODS IN THE HIGH SCHOOL AND COLLEGE	
Vol. VIII, No. 1, February, 1938. 102 pp.....	1.00
FINANCE AND BUSINESS ADMINISTRATION	
Vol. VIII, No. 2, April, 1938. 110 pp.....	1.00
PSYCHOLOGICAL TESTS AND THEIR USES	
Vol. VIII, No. 3, June, 1938. 152 pp.....	1.00
THE SCHOOL PLANT AND EQUIPMENT	
Vol. VIII, No. 4, October, 1938. 118 pp.....	1.00
EDUCATIONAL TESTS AND THEIR USES	
Vol. VIII, No. 5, December, 1938. 104 pp.....	1.00

PRACTICAL VALUES OF EDUCATIONAL RESEARCH

OFFICIAL REPORT, 1938

216 Pages

Price, \$1.50

Contains the addresses delivered at the Atlantic City meeting of the Association, February, 1938, and is the fourth Official Report published by the American Educational Research Association in separate printed form.

Deans of schools of education, librarians, and others engaged in teaching in colleges and universities will find this report valuable for textbook and supplementary reading.